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DRAWING

IN THE

PUBLIC SCHOOLS.

A MANUAL FOR TEACHERS.

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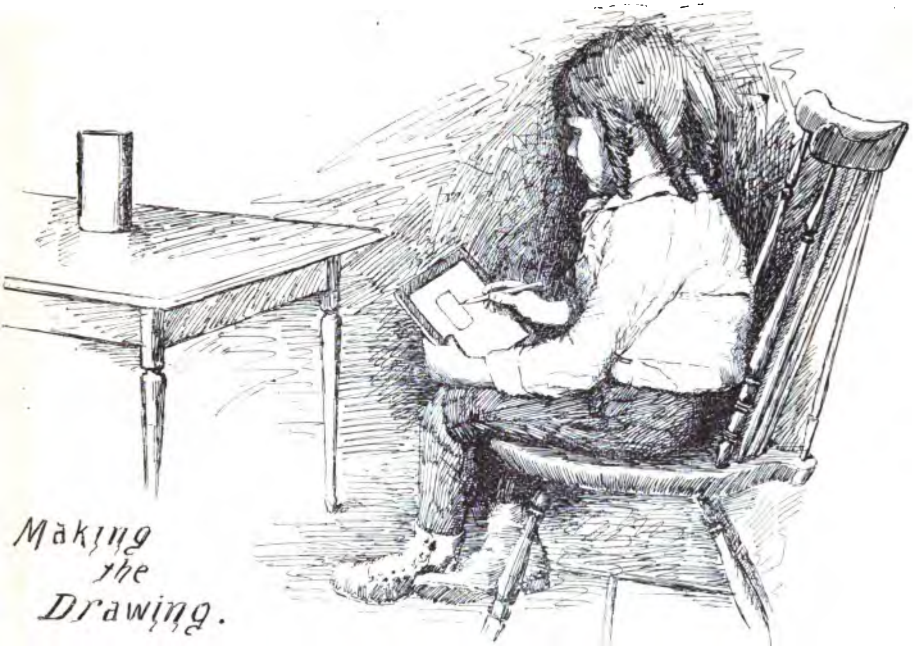

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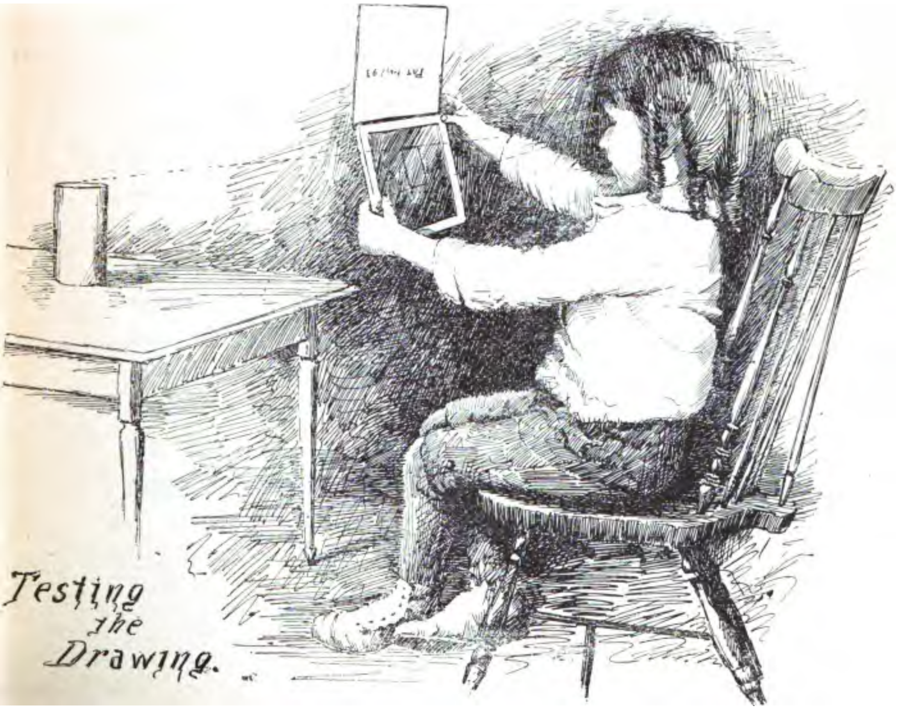

Testing the Drawing.

PREFACE.

THESE notes are arranged to give more complete directions to teachers than those contained in the chapter on Drawing in the Public Schools of the book on Freehand Drawing, Light and Shade, and Freehand Perspective. When that chapter was written, its most important part had not been proved by experiment, and attention was not particularly called to it. This book also contained much theory which the teacher in the lower grades may not wish to study. These notes present the essentials to the public school teacher, without a discussion of perspective theory, which those who wish may find in the book first published.

In presenting this manual, we wish it understood that we do not think it cannot be improved, or that it may not be as experience suggests, particularly with reference to the course of work suggested for the different grades. Our hope is that sometime teachers may know enough to depend on themselves, and arrange their work to meet the varying demands of their different classes. This no course can do, and we should not give an attempt in this direction if it were not for the fact that at the present time teachers cannot be expected to depend upon themselves. This course, however, must not be regarded as more than suggestive, and those who refer to it should experiment as practice suggests.

I wish to acknowledge the assistance received from my sister, Miss E. F. Cross, who, acting as supervisor of drawing in Winchester, Mass., has been able to prove the use of the slate practical, and to furnish many valuable points.

CHAPTER I.

INTRODUCTORY.

For several years many of my students have been pupils or graduates of the public schools, and during most of this time I have been trying to think of a way by which they might be enabled to draw with a fair degree of truth the forms of simple objects. It cannot be claimed by any well-informed observer that to any extent instruction in drawing in our public schools produces this desirable and most important result. This is not surprising, for the subject of drawing is most difficult for those who can give years to its study. As a rule, the teachers of the public schools have been able to give but a short time to the subject, and often the instruction which they have received has been positively harmful.

To enable teachers who cannot draw to lead their pupils to draw is a task which has not yet been accomplished, and no plan will ever make it possible for teachers to give instruction in drawing with the best results until it gives them a little practical ability.

Drawing has been taught from copy-books, which lead the pupil to believe that he is learning to draw. At the end of the year his labors are regarded by admiring visitors as wonderful works of art, but ask him when he leaves the grammar or high school to draw a simple group of common objects or a bit of interior from nature, and he discovers that copying is not drawing, and that he cannot draw. This must be the result of drawing from copies even when they are good, but unfortunately the copy-books have too frequently given for model drawings or representations of the actual appearance, perspective drawings which are very different from the appearance. Thus they have hindered the pupil from believing his own eyes, and in the matter of sentiment and expression, their influence has been almost entirely in the direction of rules and ways of doing which must always be bad. Working under these disadvantages, we cannot expect ability in drawing from nature. The drawing-book may be needed for examples of historic ornament and design and scientific work; it or its equivalent may be necessary for examples of freehand drawing, but the moment the student draws from these copies instead of from the object, he is wasting his time and acquiring no practical ability in drawing.

This being realized, some teachers have tried to avoid the use of books. This has led frequently to the placing of a group before the class, which they have been asked to observe and draw, but have been allowed to draw by copying the drawing of the group made by the teacher upon the board.

Until the pupil is made independent of the teacher, and able to correct his work, drawing must amount to little more than copying. Any means which will make the student able to see his errors will enable the teacher to instruct herself, and thus pupils and teachers together may learn to draw. I do not wish to say that there are not many teachers who are able to draw very well, but simply that they are in a decided minority, and that it becomes physically impossible for the teachers who can draw to do much in the time they can give to the subject and to each individual pupil. A process which is so simple that all can apply it and correct their drawings is thus absolutely necessary.

The system of Madame Cave has many good points, but this is one of tracing with chalk upon a wire screen the appearance of an object behind the screen, and then of drawing the tracing from memory, and besides the objection to tracing, it is not adapted to use in the public schools.

Although the teacher should know when the drawing is correct, she should use her knowledge not to make the drawing for the student, but to criticise its errors, for in order that the student work successfully, he must be practically independent of the teacher. Although my teaching has always been that of an advanced nature, I thought it best last year when preparing for the use of my students the book on Freehand Drawing, Light and Shade, and Freehand Perspective, to devote a few pages to the subject of Drawing in the Public Schools. In this chapter I gave the result of my study to solve the problem how to enable the pupil to become largely independent of the teacher. At the time the book was written I had not had the opportunity to judge by results, and so did not call particular attention to my improvement on Madame Cave's system.

This improvement consists, first, in the use of a slate of clear glass and a special pencil which draws upon the glass as freely as upon paper; and second, in the use of a curtain or shade to make the glass appear like a sheet of white paper, so that the pupil may draw by eye alone what he sees, as when working with lead pencil upon paper. He may then correct his drawing by removing the curtain from behind the glass, and holding the slate so that the drawing appears to coincide with the object, which it will do in proportion as the drawing is correct. If the drawing does not coincide with the appearance, the errors are at once apparent, and the curtain being replaced, the student may repeat the experiment until he obtains a correct drawing.

The results of the first trial of this plan have been so satisfactory that I feel warranted in saying that I believe that by its use, the average pupil of the lower grammar grades will, with a year's study, draw better than he usually does under the present conditions when he graduates from this school.

The use of this slate will enable all who wish to train their eyes to see correctly in a very short time, and it will be of value not only to the public school teacher and pupil, who may progress together, but to the advanced art student, or even to the artist, who will find that the drawing of simple objects upon this slate and the instant test of their accuracy will be an interesting proof of a trained eye, or an interesting and valuable assistant to the only accurate testing possible, namely, that of an accurate eye.

CHAPTER II.

THE SLATE AND ITS USE.

The experiment of using the window as an illustration of a perspective drawing is old and familiar. The drawing has generally been traced upon the pane with brush and color, or with pen and ink. The difficulty of using these means, particularly with young children, has rendered such use simply an interesting experiment. To make practical use of the principle, a pencil which will draw freely upon the glass must be used. With such a pencil the glass may take the place of paper, and the principle enables even the young child to test his drawing instantly and surely. This pencil must be one which will draw a fine line and be tough enough not to break easily. After long study and experiment, a composition has been made which is not only very satisfactory in its marking qualities, but, more important, is elastic so that it will bend to a considerable extent before breaking.

The slate should never be used by tracing the appearance — not that Madame Cave's system has not accomplished much good, but that when used in this way, the result is less satisfactory than when the drawing is made by eye alone, as upon a sheet of paper.

We learn by experience. We may watch an artist draw and paint for a long time, and if we have never tried to draw or paint, receive little benefit. The teacher who draws much for the student is not teaching. The student who copies is not drawing in its true sense.

We must depend upon the eye for all good results. We train the eye when we discover its mistakes. If a person does not discover that the circle seen obliquely appears an ellipse, he will see it a circle all his life. He will always see objects of their local colors unless, for instance, he sometime discovers that something which he did not recognize and which appeared blue was actually some very different color. The only way to train the eye is to depend upon it, and for this reason the student should always draw what is before him without measuring or testing in any way. He should draw upon the slate when the curtain is behind it, and should remove the curtain to test the drawing only when after careful observation, he thinks it is what he sees.

The only limit to the age when this slate may be used is ability to hold it for testing the drawing about at right angles to the direction in which the object is seen. Some very young pupils will do this readily, and some older ones will have much trouble. One of the greatest difficulties that I have found during my teaching in art schools, is that students measure with the pencil tipped away from them ten or twenty degrees or more, and make drawings to agree with the measurements even when they see better. They apparently prefer to depend upon these false tests rather than take the trouble to use their eyes. Of course nothing can prevent or excuse carelessness, and all that is claimed for the slate is that it may be of great assistance when rightly used.

For use outside the public schools, the student may begin with a large sheet of paper or a circular or square card placed on the floor or on the table. He may then take a box or other common object. It will be seen that the subject studied must be if small, quite near the eye, and thus the student who draws at home has the advantage of the student of the classroom, for he has the choice of all the objects in the room, and may work with them near or distant, according to their size.

It will be well always to make the drawing on the slate as large as possible and yet have it cover the object when the slate is held at arm's length.

The slate may be used to test the accuracy of a drawing on paper by tracing the drawing upon the slate, and then holding it before the object in the usual manner.

After a little practice in drawing upon the glass, many of the pupils are found to draw at first trial fairly well by eye, and it will be well to discard the slate, at least part of the time, or to use it as a test in the way just explained.

The reason why freehand drawing has always been so difficult to teach is that no sure way of awakening the first correct impression of the appearance of the form has been given the student. When this impression has been received and appreciated, the rest is easy and consists simply in practice. The slate at once introduces in the most forcible way the subject of appearances entirely separate and in contradiction to the facts, and its use will not be necessary, except occasionally, after the first practice has been given.

The objection of some that the slate may be used to trace the appearance and that it is thus simply a mechanical means of making a drawing, will apply of course to the work when teachers allow or advise students to begin in this way. But when they are told how to use the slate properly, there will be few who will not find such use more interesting than the tracing of the form, and those who disobey and trace will even then obtain a better idea of the apparent form than they would without the slate.

The use of the slate to trace is, however, quite impossible in any except the first lessons from objects upon the desks, or so placed that the slate may rest upon the desk or other support, for it will be impossible to hold the slate in one position so as to make tracings of subjects similar to those illustrated, and this is the effective safeguard against improper use of the slate. When a drawing has been made upon the slate, it may be held with both hands steadily enough so that it may be compared with the object, and its proportions and masses tested ; but the tracing of more than a line or two of the distant object will be impossible until the slate is held and a sight fixed for the eye, and such aids to mechanical work should not be given the student.

In the drawings of groups of models it will be difficult to hold the slate so as to compare the smallest details. The masses, and the directions of all important lines can, however, be seen, and the student who trains his eye to give these correctly will have little trouble with the minor points. As the size of the subject and the number of its parts increase, so does the difficulty of holding the slate so that it may give more than the principal masses, and the student who does not understand that the slate is not given as a means for tracing will be disappointed in its use.

A tracing of a large subject which is near, or any extended subject such as an interior, becomes a plane perspective drawing, which always distorts large parts of what it represents. It is impossible to make a tracing of any extended subject upon a slate placed near the eye, which shall represent the different parts of the extended subject just as they appear. In order to represent such subjects with the best success, the draughtsman must have made a careful study of the theory of Model Drawing and the distortions of Plane Perspective. He cannot avoid error by mechanical means, such as tracing, or the use of photographs, which are frequently the most distorted representations it is possible to make. The avoidance of some distortion of detail in a drawing representing a wide field of view is impossible, but this is a question of theory which I do not wish to consider here.

Some artists say that students should use no test but their eyes, and that even the pencil for measuring proportions or the thread for directions and intersections are means which are too mechanical, and which should be avoided. They say that you should lead the student to feel the difference between right and wrong.

As a rule, those who are strongest in the expression of such ideas are teachers, if at all, of advanced students. It is thought that any one who has had much experience with pupils who have never learned to draw will say that feeling must generally come after some ability to see has been acquired, and that to teach them to see correctly is a most difficult problem in which the teacher's eyes cannot serve the pupil, and which can only be solved by means which prove to the student the falsity of the work, which, until the tests are applied, seems perfect to him.

As the pencil is often held carelessly, its use by students who have had some training often does them more harm than good, especially when they measure before drawing, for they make the drawing by the incorrect measurement, when, if they would use their eyes, they could see better proportions.

Any means which are used to take the place of the eyes, or any measures which are taken before drawing, must harm the student, for such work makes it difficult for him to use his eyes, and weakens him in proportion as he studies in this mechanical way. But tests which are applied after the student has carried his drawing as far as he can see are not mechanical so far as results are concerned, and, if they show the drawing which was thought correct to be incorrect, they must be educational and valuable. My experience has led me to believe that the only way to produce successful results is to make the student independent, and, as far as possible, enable him when he can unaided see no farther to test the accuracy of his work. In form he can do this quite perfectly, and, if he applies tests only after the drawing has been carried as far as possible without them, he will advance rapidly.

In light and shade the use of a lens of about fifteen inches focus to blur the effect, is a mechanical aid which enables the student to believe his own eyes, and see, for instance, that a black vase appears lighter than a gray cast, when without the glass he would fail to see it, even after half an hour's talk by the teacher. This glass will also prove a valuable aid in color study. It may be mechanical, but it will certainly place the student where he can feel things and much more quickly than the teacher who is unable to prove himself right to the student who fails to see color or values as the teacher does.

The right use of tests, such as the pencil, thread, blur glass, and the glass slate, quickly renders the use of all tests unnecessary by training the eye to see correctly. For instance, the use of the blur glass for a very short time will enable the student to realize what the masses are, and to see simply without mechanical aid — to see, in fact, much better than is possible with such help, for the eye can focus to give any desired amount of detail.

If the artist who has forgotten his first struggles in drawing, and who wishes students to be taught to feel, will take a class of average pupils, and try to give them this power without the assistance of tests applied by the students, he will be more fortunate than most artists who teach, if he does not decide that many of the class have mistaken their vocations; and if he has not the privilege of telling them so, or if he fails to make them agree with him, and they still persist in producing things which are completely devoid not only of sentiment, but also of all vestige of even mechanical truth, the chances are that he will be very glad to give them simple aids to assist them to see, and will, after a short experience, decide that these aids are not only necessary but wise.

While speaking of artists, I wish to refer to the criticisms sometimes made upon the cuts and sketches of many of the drawing-books for students' use. As a rule, these drawings are mechanical and hard when they might be more artistic, but some criticism is calculated to give the student the idea that artists' sketches do not give the exact geometrical appearance, and that therefore it is useless for the art pupil to try to draw a perfect line, for instance, an ellipse in the representation of a circle seen obliquely. Such ideas more than anything else are calculated to produce the careless, spotty, and meaningless sketches which are made by students who are searching for handling, technique, and freedom as the all-important ends, when they should be seriously considering how what is before them appears.

Because artists who have given their lives to acquiring knowledge may be able to express this knowledge so simply and directly that their work may seem careless to the student, is no reason for him to conclude that it is carelessly done. The strokes which seem accidental to him express effects which it has taken the artist perhaps years to see, and which the student cannot see without similar study. The handling of the artist is free because by long study he has become able to see truly at a glance, and his only thought in working is the idea to be expressed, and not the handling of the medium.

The pupil who after much effort to express the form of a circle which is seen obliquely, can only obtain a line which is as irregular as a brook, and which is without any feeling of the actual form, ought not to be permitted to think that free handling of his pencil or brush will hide inability to draw, or give a substitute for any of the qualities essential to good work. When he has trained his eye and hand so that they are his servants, it is time to think of handling; but at this time it will not be necessary, for it will come without thought as a result of the knowledge and experience gained by serious study.

The student, then, should not shirk careful drawing nor the most searching study of detail. It is useless for him to think that he can produce a drawing or a picture which has the parts essential to it well studied, if he cannot make a study of a simple group of still life which is complete in representing all parts of the subject and every detail, in correct drawing and values. The student who feels that, because all the detail is not always essential, he can omit any before he becomes able to express all by correct drawing and values if asked so to do, is wasting his time, for he will make drawings which omit the essentials, and which are without merit of any kind.

The student who can draw a perfect ellipse easily will have no trouble in representing curves which are not quite circular; and, understanding that a sketch which is artistic must give a sense of atmosphere, he will soon discover that a hard and rigid line is not satisfactory, and being able to draw freely, his sketches will have the variation of line which is essential; but this can never come by avoiding serious study of form and effects.

The student who studies for love of art and not for fashion's sake or for a trade, will discover that popularity is not a sign of merit, and that financial success unfortunately is gained frequently by those who know the least, while serious, honest work is unnoticed by the public which buys what is simply "pretty" or "clever" or what is the style, without regard to its merit. The person who thinks more of money than of art or honor should profit by the frequent examples of financial success to be found, and stop studying art at once, for apparently the chances are that the less he knows the more money he will make. The serious student must understand that the sketches which were made so rapidly and sell as fast and for such large prices are often as devoid of truth as it is possible for them to be. They are conventional in drawing, false in color and values, but attract the eye because they are "sketchy" and interestingly composed. The student should not permit them to influence him to work for such false and cheap results, nor should he be persuaded against his judgment by the popular verdict, into accepting this class of work as good and worthy of emulation.

The teacher, then, should not be disturbed by the criticism of superficial art students or critics, but should insist upon the students beginning seriously to study with only the idea of becoming able to represent truly just what is before them: after this they must depend upon themselves for the artistic feeling which shall decide what is essential, and when changes from the actual appearance will produce a more satisfactory impression than absolute truth of appearance.

CHAPTER III.

DRAWING IN THE PUBLIC SCHOOLS.

AT the beginning of his art education, the pupil should be taught to see correctly. When this has been accomplished, and he is able to represent truly what is before him as it appears, and not as he thinks he sees it, then he is in a position to advance, and his personality may be cultivated. But as the first point to be gained is ability to see truly, it follows that we should from the very start demand *truth* — truth of outline, truth of light and shade, and truth of color.

In beginning I wish to say that drawing in the public schools can never accomplish results of any value until the pupils can observe for themselves; in other words, until they can draw from objects instead of from drawings. This is impossible in many places now because the teachers have not materials. The schools must have models and all necessary materials, or the work will be simply the copying of drawings in the books, or, if these are not used, the copying of theory drawings on the board. In the elementary grades the instruction can be given well enough in the classroom, but the advanced grades should have provided for them a room arranged for the purpose. Drawing cannot be taught without materials any more than manual training can be taught without tools, and a part of the necessary materials can be used in one no more than in the other.

No committee would expect a boy to use a gouge to do the work of a chisel, or to learn to use his tools without wood, or that a class should get along with tools for one student; yet the committee or superintendent often expects drawing to be taught without materials, or with materials for part of the class.

In most public schools attention is now given to drawing. In cities this instruction is generally in charge of a special teacher, but this special teacher can do little more than to direct the regular teachers. The subject is comparatively new, these teachers have had perhaps no regular instruction in drawing, and few have had the liking for the subject necessary to interest them in the work, or to cause them to obtain the knowledge they are expected to impart, and with all the stress of work upon them, it is surprising that they have accomplished as much as has been done in some places. In many cases the special teachers have had but little training, and frequently this has been simply in the direction of understanding the course of work laid out in drawing-books, or of studying the "best methods" instead of acquiring some practical ability in drawing. This has been the inevitable result of the rapid growth of the subject, and years must pass before it will be understood in all its bearings, and before there will not be special instructors without the training requisite to success.

The pupils of our public schools cannot all be artists, or designers, or engineers, but all will be benefited by a logical course in drawing, and, if they have it, discover special talent, which may be developed in the higher schools; and the instruction in freehand drawing can be practical and give to all right ideas, and to almost all ability to sketch from nature with a degree of freedom and truth. The public school instruction can be such that the student who wishes to study art upon leaving school may do so with a good foundation and nothing to unlearn.

The instruction in pictorial drawing is now the weakest part of the work in the public schools. It is so because it is neglected, or because bad methods are used. At the present time instruction in drawing in many places is largely instruction in manual training and kindergarten work. Without doubt this is valuable, but not as drawing, and it should not take the place of drawing. Drawing should have an hour by itself. Cutting paper, whittling paper-knives, sewing pen-wipers, etc., can never give the least ability in drawing; neither can this work, as many carry it on, give any knowledge of working drawings. The making of objects can be of great assistance, and should naturally go with the study of working drawings, but the objects should be made from the drawings which must show all the construction.

I do not see how the making of objects can be done in school without special time being given to it, and the subject of drawing proper not suffer; and it seems that as the result of the present agitation in favor of manual training, in many places this subject takes the place of drawing. Many drawing-teachers are unconsciously effecting this by placing in their course paper cutting and the making of objects that have no connection with either the freehand or the instrumental drawing.

In many cities drawing-books are used. These books contain examples of historic ornament and design which are to be copied, and also drawings of models and common objects, some of which are to be copied, and others are given as illustrations of possible appearances.

In many places most, if not all, of the work in object drawing is thus copying, and so little of actual drawing from the objects is done, that with the objects before them students are found copying the drawing of the student in front, and the drawings of a whole row are alike ; or copying the drawing made upon the board to illustrate the principles. We have even known of cases where the pupil has turned to some text-book, as a geometry, in which he has tried to find the appearance of the object before him. Such are the results which come from copying drawings.

It is easier for the teacher to allow the pupil to copy, but such work is of no value, and the copies, even if neatly done, deserve only censure. The few teachers who have had the courage to dispense with copies deserve praise for showing that drawing can be taught from the objects, and their example should result in a general change from books to nature. Rightly used, books may be of assistance, but the pictorial drawing should be by itself in a blank-book, and each drawing should be made from the object.

The change from copying to drawing from the object will require hard work from both pupil and teacher, and at first the drawings will be very unsatisfactory in themselves ; but after a short time, when the pupils have been started rightly in the lower grades, they will draw readily and with greater freedom, and will be able to draw from nature, which they never are under systems that allow them to copy from a book or the board.

At present it is the aim of most courses in drawing to give a thorough knowledge of the actual form before attempting to represent its appearance. The knowledge of the facts is of course of some assistance to the person who is to represent them. A glance at the object and it is recognized, and the mind supplies the information which it might take the eye some time to discover. But this knowledge is more apt to do harm than good, for the pupil uses it instead of his eyes. For this reason, I should advise that the *continued* and thorough study of facts, now followed by most teachers, be postponed until the pupils have had some practice in representing the facts.

The facts can be taught perfectly in a very short time, but to attain perfection in their representation is a problem requiring much more study and long-continued effort, and for this reason it should be given earlier and more serious attention.

CHAPTER IV.

GENERAL DIRECTIONS.

In beginning, I will answer the question that I have frequently been asked, "Why do you not commence by drawing the sphere, and then take the solids in the order in which they are presented by other courses of drawing?" My reason for not using the sphere is that I wish to introduce the student to the study of appearances. I know that he can draw a circle, for he has had practice of this nature in his first training. I know also that he will see the sphere a circle, and that he will learn nothing of foreshortening by making the drawing. In fact, the knowledge of the circular form of the sphere which he represents by the mental image that it creates, will make it all the more difficult for him to see a circle an ellipse. The fact that the highest point of the sphere does not appear on the outline when the sphere is below the eye, and that the neck of a vase, or the stem of an apple, often appears inside the spherical outline, I think rather difficult for the first lesson in object-drawing. It is so difficult that many art-school students fail to appreciate it, even after repeated explanations, and yet this is the only perspective feature of the lesson. We must enable the student to realize that the mental image of the object is created by the facts, and is very different from the image in the eye, to realize which perfectly will take years of hard study. For this reason I prefer the child to begin with a circular or square card, placed horizontally in front of him. The first lesson from this object is practical, and shows the pupil that the facts and their appearance are very different.

I am also asked, "But why begin with a plane? It is only one face of the cube, it is a part, and not the whole." This criticism seems to me a false application of a principle which is good and to be observed in art as well as any other study. The card is a unit as much as the cube, and I think it is a little simpler for the first lessons for the very young pupil than the cube which presents three squares at once. However, this question is of no great importance, and if any wish to begin with the cube, they will probably get along very well, and certainly, after the first experiments, one form is as good as another.

I see no reason for making elaborate tables according to which the different forms are to be arranged and studied, but should let the capacity of the student alone decide the nature of the lesson and the objects to be studied, with the understanding always that the pupil is to be kept to the geometric solids and objects based upon them until these forms can be well drawn. The reason for studying boxes, frames, prisms, vases, etc., is that the forms are absolute, and errors can be discovered much more readily than when drawing plant forms, vegetables, etc., for in a peck of potatoes there may not be two which are alike in form.

The geometric forms not only assist the students to correct their own drawings to a much greater extent than is possible with any other subjects, but they enable the teacher to criticise with a small part of the time and energy, to say nothing of the ability in drawing which plants and objects without absolute form require. I should not allow the pupils to draw, except from the geometric forms, until they can represent these subjects well. If they cannot do this, they will draw the others no better, and they will learn more in a given time spent upon the geometric objects than in any other way. Study of the right kind from these forms will enable one to draw understandingly from any subject. This cannot be said of any other work. Students who have drawn from life, even for several years, when put before the practical perspective involved in the geometric solids, frequently make the most ridiculous errors. It is easy for the teacher to make an interesting exhibit of drawings by choosing plant forms, etc., and the public that studies drawing by painting plaques, still-life, flowers, etc., by paying the accommodating teacher to show how to do this, that, and almost every part of the canvas, will see great merit in the work, when a sensible and practical exhibition of good model drawings would create no enthusiasm in those unable to draw such subjects themselves. It is easy to make a show, but the teacher who has the welfare of her pupils at heart, will not be satisfied to do this at the expense of knowledge.

Drawing from cards of various shapes will not produce interesting results pictorially. The drawings may even have to be labelled in order that it appear to the casual observer that they are pictures and not reproductions of actual shapes; but the training given by this study cannot be improved upon educationally, and will enable the student in a short time to make drawings which will be understood by all.

The cards or objects must be small and near the student, or large if far from him. The best plan in the beginning seems to be to use cards placed upon the desk. The slate may thus be placed against the nearest edge or angle of the card, and the drawing be full size.

If the card is at the farther part of the desk, and the student sits back in his chair, the nearness of the object is an advantage rather than otherwise, for the slate may be placed upon the desk, or held steadily by the hand which rests upon the desk, and thus the drawing be easily compared with the appearance. The angle at which the object is thus seen is not an unusual one. This angle may be varied by placing the card on books or boxes.

The appearance is not as pleasing when the objects are upon the desk as when farther away, or nearer the level of the eye; but teachers and artists must understand that this first work is educational, and not picture-making for the sake of immediate effects; and students must know that to produce artistic results a large amount of study of an elementary and exact nature is demanded.

The cards may be first studied at the centre of the desk and when a side is parallel to the desk, then when the sides are at angles to the desk. No trouble need be taken to specify the angle. They should be drawn in many different positions, and should be studied until the pupil can draw them so correctly that the drawing will, when tested, coincide with the appearance of the object.

The great advantage of this individual study is that it enables the student to progress independently. There are always some who require very much more time than others, and when the class or any number of the class draw from the same object, the slow ones do not finish, or the quick pupils are obliged to spend perhaps half their time waiting for them. By giving each student his own models, he can advance as rapidly as ability permits.

The models needed for the first part of this work can all be made with little trouble by the pupils, the disks cut from cardboard, and the simpler solids developed and made of stiff paper. Each pupil can keep his own cards, and to this extent relieve the teacher.

Some of the many drawings from these cards should be kept. These may be made on paper with a lead pencil by eye alone, and when carried as far as the student can see, they may be tested as explained on pages 8 and 9.

In order that some may not shirk and depend too much upon the slate, using it to trace or practically trace the form, after the first lessons they should be compelled to draw part of the time without using the slate. As the student advances in the course, the slate will be used less and less, and in the upper Grammar and High Schools only occasionally as a test of proportion.

It will be comparatively easy for the pupil to hold the slate at right angles to the way he looks when the card is directly in front of him upon the desk, but it is much more difficult when the object is not thus placed. If large objects can be obtained and placed so they can be seen, it will be well to draw from them once in a while. If this cannot be done, the next best thing is to draw from cards and small objects when they are at the side of the desk, or on the next desk at the side, or the one in front of this, or on boards between the desks. When the cards are not on the pupil's own desk, his drawings must be smaller than the cards. A little practice will show to what extent. They should be as large as possible, and admit of comparison by the slate held in the hand.

The study from the single card may be varied by using two cards, one horizontal and the other vertical (Fig. 11), or by connecting two cards by a small rod (Fig. 15); the solid objects will also give variety and interest to the work. It is a question when these may best be introduced. I have found that in about twelve weeks children in the fourth grade, whose age was about nine years, have been able to begin the study of model drawing, and advance to draw cubes, plinths, etc., as well as many students in my art-school classes, whose ages have been two or three times as great; and I think that by the use of the slate it will be possible to develop the ability of the students, so that independent of grade, they may draw equally well, according to their capacity, some pupils in the lower grades excelling those not naturally so quick in the upper, but each increasing in power with added age and study.

When able to draw the cards and combinations and simpler solids, the more difficult solids, frames, and vase forms, together with common objects of geometric form, may be studied singly and in groups. The judgment of the teacher must allow the pupils to advance as rapidly as they are able. If not convenient to arrange groups so that the rapid students may always have a group to study when the first is complete before the slow pupils have finished, they may draw the desk or support of the group, or any desk, table, or object in the room.

After the first lessons from the cards and small objects placed upon their own desks, they should draw from larger objects farther from them. A convenient arrangement by means of which half a dozen may draw from a group consists of a board long enough to reach across the aisle and rest upon two desks. Upon this board the group may be arranged, and several pupils can see it very well. The groups may be placed thus between the desks in alternate aisles, leaving the others free for the teacher's use.

By such an arrangement, drawing in the grammar grades can be carried on in the regular classroom, but in the High School a special room fitted with screens, shelves, etc., is absolutely necessary. Of course it is useless to attempt to study light and shade even in this room, except there is shade. This means that the room must be divided or arranged so that the light comes from one source.

With the time which can be devoted to light and shade, it is a question if it is worth while to try to do anything with it until the student can draw the forms easily. In the grammar grades such a thing as a decent light for study will generally be impossible, charcoal would prove a very dirty material, and although I believe that under proper conditions the child might make a light and shade drawing at first as easily as an outline, I think that until the conditions are favorable, we will do well to enable him to draw in pencil. Certainly this will be a great improvement on teaching him to copy.

The objection of dirt cannot be urged against pencil shading, yet under the generally unfavorable conditions for study in light and shade, it seems best not to try to give what must be a superficial knowledge, and to postpone this study until the conditions are favorable, or say to the High School. The copies of many textbooks shaded with line hatching and stippling are so ridiculous that one wonders how it is possible for any one to think of placing such material before the young student, and teachers who use these books are earnestly requested not to inflict this so-called shading upon their pupils.

It is thought that nothing will be lost by concentrating the time upon Model Drawing. The ability to draw is so valuable to all, that drawing will be highly prized if it gives real capacity in this direction. There is no reason why the graduate of the Grammar School should not be able to express his idea of simple forms pictorially. When started rightly, the advance is rapid, and many of the students will be interested to have a sketch-book and make pictures, which they will find they can do when they can draw the blocks and groups.

The High School work should include furniture-drawing, and corners of the room with more difficult groups of models. A graduate of this school should certainly have the ability to sketch in-doors and out with truth so far as proportion is concerned. I will say nothing about the matter of light and shade in the High School, having discussed this in my previous book.

The interest of the students in drawing will be greatly increased and they will be much benefited by examples of good drawings by advanced students and illustrators. With very small outlay each teacher can procure from magazines and papers reproductions of pencil, pen-and-ink, and shaded drawings by the best artists. If these reproductions are placed where they can be seen all the time, they will interest the pupils, and give them an idea of expression such as they can never obtain from the mechanical cuts of most drawing-books. Care should be taken to secure some drawings simple in character, which may serve to interest the pupil in his own elementary work. These drawings will prove an incentive to the use of a sketch-book, and nothing will prove of greater benefit than the regular use of such a book.

I should not attempt to teach much perspective theory. Until the pupils are older, practice alone is what they need. They can see that the apparent heights of the cards decrease as they are brought toward the level of the eye at which all appear lines, and that parallel retreating lines appear to converge; but beyond a few of the simpler points which are shown by observation of the models, it is not wise to go. Diagram Perspective is not given the importance which it formerly held in most courses. This is a step in the right direction, for it is absolutely impossible to understand Scientific Perspective without a thorough knowledge of Orthographic Projection and Descriptive Geometry. As these studies are not attempted, the time spent on Diagram Perspective accomplishes no more good generally than to illustrate vanishing points, which can be done in a very few minutes. Diagram Perspective is necessary to the architect. It has done the artist much harm by perpetuating perspective representations which are false so far as the appearance is concerned, and creating the idea that perspective is a subject which is too difficult to understand and apply, for the artist to trouble himself about it. The only perspective which the student of freehand drawing should think of at first is that which he can see in his models, and even in the High School little more of theory is wise than is illustrated by the simple box — that parallel retreating lines vanish, that horizontal lines vanish at the level of the eye, and in two points when two vertical sides of the box are seen.

This very simple statement is understood at once, and is familiar to all, and yet advanced art students in making a drawing from the simplest subject, will show that they have not the faintest idea of what these words which they have so often seen and repeated mean, and in our magazines and papers, even our illustrators are showing the same lack of understanding of this simplest principle, or if not this, surprising carelessness.

All this shows how useless it is to tell students anything whatever. The only teaching which benefits is that which leads them to discover and own the truth, and which helps out of difficulties that they have discovered. I might say with Emerson that the time to answer questions is only when the questions have been asked by the student. If the student, when rightly taught to observe, does not see or inquire for all the points essential, it is doubtful if much explanation will make the points his. I have frequently been asked questions by students or graduates of advanced classes, which show that they do not understand the simplest principle of the study whose complicated problems they are trying to solve. Such questions are the result of trying to memorize statements of principles. Principles must be understood. The only perspective essential to freehand drawing can be seen by even the young child, and teachers will do well not to attempt to go beyond what is easily visible in this way.

When drawing upon paper, teachers should insist upon the drawing being carried on as explained on page 35, part II. It is stated frequently that the pupil should use a soft pencil, and certainly one would rarely think of making a quick, suggestive sketch with a hard pencil. The student, however, is not sketching at this time, but training his eyes to see. The training given by not erasing until the correct lines are found is so valuable that if he needs to work a long while to get the form, it will be much better for him to use a pencil hard enough to enable him to get the right lines without erasing. A hard pencil used very lightly will allow of many changes being made and yet separated, and such lines are erased much more easily than those of a very soft pencil which smutch the paper. When accenting, the softer pencil may be used, and used exclusively as soon as the student is able to draw.

It is especially important that the pupil sit back in his chair and hold his drawing at arm's length, at right angles to the way that he sees it. The pencil should be about full length, and held, except when accenting, with its back end pointing to the centre of the palm of the hand. To work thus he must draw upon a block or upon paper placed upon a drawing-board. It is useless to expect the pupils to draw when the paper is upon the table and seen obliquely or from a distance of only a few inches. A block or a drawing-board is an item of expense, and may be objected to for this reason, but it will be well for drawing-teachers to insist upon the materials necessary to teach drawing, and when it is understood that the time spent in drawing is absolutely thrown away when the materials are not provided, they will not be so difficult to secure as at present.

The above methods have been tried in the public schools, and there has been little difficulty in getting the students to work as directed. This shows the advantage of beginning rightly, for many older students of different training find it almost impossible to get into sensible ways of working.

When drawing groups, many fail to realize what is meant by suggesting first the mass, and then the different objects. They wish to spend half an hour in drawing a fine nice line to block in the group. They must be made to understand that they are not expected to draw rightly at first, and that the only way they can train the eye and advance is to put down quickly its impression, and then to change as fast as errors are seen. Instead of being afraid of extra lines, let them know that they are expected and desired, and that at first the best drawings will have the most lines, each different position showing observation and change. If they still hesitate to believe or carry out instructions, and insist upon using the eraser, as older students so often do when brought up on the eraser, take the erasers away from them.

My subject is pictorial drawing. I am interested in it, and may claim for it more than I should. But it seems to me that instruction in drawing in the public schools tries to do too much, that is, attempts to cover too many subjects, and that they are not kept enough apart. In the first place, I do not believe in teaching Projection and Machine Drawing in the lower grades. It is very easy to get drawings to show in these subjects, but the knowledge behind them is not of great extent or value, and could be imparted to much better advantage by a few lessons in the upper grades. The student would then be old enough to grasp something of the subject, and its ideas would not interfere with the study of appearances. Certainly in the lower grades freehand drawing is much more valuable.

Projection and Machine Drawing as such, should be reserved for the High School. The upper grammar grades can study the making of working drawings *from objects only*, and in a few lessons get all that will be of any benefit to them.

Certainly most of the time in the lower grades, and at least half of that in the higher grades, should be given to drawing and to the practical side of drawing. I have heard of students in the High School who were made to take up their pencils, go through gymnastic exercises with them, and proceed to draw in concert, according to counting by the teacher. These pupils made perhaps two or three drawings in the year in place of the two or three dozen which they should have made. We cannot expect students to be interested in drawing or to accomplish results of value until teachers understand that *drawing cannot be taught by rule or system*, and that there is no patent way of holding or manipulating pencils and other materials which will take the place of observation and knowledge; in short, that there is no rule possible for the production of even the simplest works of art. An answer to the question so frequently asked, "How do you represent this or that object or effect?" is impossible, and the question shows only complete ignorance of the province of the teacher as well as that of the student.

Design can of course be taught in all the grades, and the work executed in colored papers whose colors are good must be of value.

Historic ornament, as studied at present, enables the teacher to make a show of what frequently amounts to little more than copying. Examples of good ornament will be valuable in the lessons on design, but teachers should not take up this subject simply for the purpose of getting something for an exhibition.

Much study of theories of color and æsthetics even in the High School, will accomplish little more than to divert attention from the useful subject of drawing. The wise teacher will decide that problems which cannot be agreed upon by the most mature and capable minds of the age are not fit subjects for the young, and will interest and instruct her pupils by the best examples of good design and fine art work, by which practical study only can they be given true ideas of the good and the beautiful, and here only through gradual development due to that education which begins and ends with life.

CHAPTER V.

EXPLANATION OF PLATES.

THE course of work laid out represents what it is believed the students in the public schools should accomplish before they enter the High School. The drawings are intended to be simply suggestions to the teachers in all the grades, of the work which they shall give their classes. It is not intended that any teacher shall feel obliged to give precisely the objects and positions which are sketched, nor is the work given as an absolute standard of the amount which should be performed. If any teacher has an unusually slow class, she should spend upon each object drawing the time necessary to allow the pupils to do as well as they can, even if as many drawings as are shown for her grade are not made. On the other hand, with a quick class which finishes the work shown before the end of the time allowed for freehand drawing, the teacher should continue with the work of the next grade, or with the many variations which are possible by changing the positions and combinations of the objects. Judging by the results which have been secured in the public schools of the town of Winchester, Mass., where the first experiments with the slate and pencil have been made, it is possible to obtain not only good model drawings, but many of them from even the lower grades, and we are justified in saying that we believe that the course suggested is not too difficult nor too lengthy for the students of the public schools when this part of the work receives the attention which it deserves.

Little difficulty has been found in interesting the children in the work. They soon discover that they are really learning to make pictures, and when they make one which is correct the first time, their delight is great, and their interest in the work is all that the most zealous teacher could desire.

The work is first planned for the fourth grade, as this is the lowest in which the study of object drawing has been attempted as explained. It is thought, however, that it will be possible to begin even earlier than this the study of the square and circular cards, etc. The limit to the age seems to be the ability to hold the slate so as to compare the drawing with the appearance, and if the teachers find this ability in grades lower than the fourth, the lessons can be given so that the work of Plate I. shall come as early as possible. The sooner the child begins the better, for the entire course will profit by it.

It is not supposed that at first the pupils of the upper grades will be able to draw groups such as those illustrated. On the contrary, unless the instruction in drawing has been better than usual, all the grades will need to begin with the work of Plate I, and though the upper grades may advance more rapidly than the lower, they may not be able to draw such groups as the course suggests until they have taken the work planned for all the lower grades, through these grades. The drawings of the fifth, sixth, and seventh grades are more numerous than those of the upper, for after the instruction of the first few grades, there is little choice in the subject of the lesson.

The students in all of the grades will be benefited by occasionally reviewing the simpler work, and even those most advanced will be greatly helped by the study from large models placed at a distance. These should be practised until the pupil can make a drawing which will practically cover the object at first trial.

The work laid out for the upper grades will not be found too difficult if the classes are well prepared in the first work. It is, in fact, much simpler than that in some well-known systems, and certainly any system which does not give ability to represent fairly well the forms of such simple objects cannot claim to teach freehand drawing.

As the regular teacher will generally give these lessons, it is necessary that she be able to draw the objects which her pupils are to study, and to apply the tests correctly. She has very likely had but little practice in drawing from objects, and none in working with the slate, and if she would have the best results from her class, she must thoroughly understand the work. She should begin her study just as the pupils commence, by drawing from the cards, and should carefully follow the directions for this work. When she is able to draw the cards correctly, she should continue by studying the solids singly and in groups. If directions for testing are heeded, and she always draws first, and then tests, she will find her ability constantly increasing, and thus she will become able to give her classes intelligent instruction and produce good results.

All the lessons in Grade IV. and the first lessons in Grades V. and VI. are from cards of different shapes placed horizontally, vertically, and obliquely, and also when held to represent the bases of different prisms. Most of the models for these lessons can be made by the pupils by cutting the cards from stiff paper or thin cardboard. The models for Figs. 15, 16, 17, 18, 53, 54, and 57 can be made by fastening the cards to small pieces of wood, but the teacher will probably find this too difficult for most classes, and the models, if thus made, could not be prevented from coming apart.

The figures mentioned and those similar, in fact, all of the illustrations not representing the solid objects and groups of models, show only a few of the combinations which it is possible to obtain from the set of drawing models which has been designed for individual use by the students. These models are made of disks of sheet metal and are of double thickness, so that the angle piece A, shown in Figs. 11 and 12, may be placed between the two parts of each disk, and thus hold them together. The pieces are really the developments of the faces of the different solids, and are made of regular proportions, so that by means of but few pieces it is possible to represent all of the geometric forms most commonly studied. By placing three squares together the pupil has the equivalent of the solid cube for pictorial purposes, and by placing the six squares together he has the cube for study in working drawings. In this way the other type forms may be represented.

Figs. 15, 16, etc., show the disks of this set which are provided with sockets. Wires are made to fit these sockets. By means of a wire whose length is twice the side of the square, the squares are held to represent the bases of the square prism. By a wire half as long, the squares may be held to represent two faces of the cube, and held by a wire still shorter, they represent the bases of the square plinth of the usual proportions.

These models are valuable because they give a possible range of combinations which allow the students to work independently as rapidly as they are able, and without too frequent repetition. They are also valuable because they familiarize him with all the edges of the objects. In the solids, part of the lines are invisible, but these models practically make the solids transparent. Their use for the purpose of freehand drawing is good training in the line of manual education, and practical training in the facts of the solids, and they occupy so little space that the pupils can easily keep them in their desks.

If these models are not used, the lessons of Grades V. and VI. can be given from small solid models placed near the pupil, or, if these are not at hand, the prisms, plinths, etc., may be made from paper. If the pupils have not the instruments, or cannot do the work accurately enough, the models may be made for them by the upper grades.

Work of Grade IV.

The models may be made of the following sizes, and may be kept by the pupils: —

square card, sides 4 inches,
circular card, 4 inches in diameter,
oblong card, 2½ inches by 5,

triangular card, sides 4 inches,
two cards at right angles to each other, both squares of 3 inches,
two cards at right angles to each other, one a square of 3 inches, and one an equilateral triangle of 3 inches.

The pupils are to first draw these forms accurately upon stiff paper or thin cardboard. If the class is not provided with compasses, the teacher can make a few circles of the required size, and pass them around, letting the pupils mark the shape of the circular card from these forms. The model used in Fig. 10 consists of two square cards at right angles to each other.

To make the object, draw an oblong 3 inches by 6 inches, cut out, and fold in the middle so as to give two squares. The model for Fig. 14 consists of two cards at right angles to one another, one a square and the other an equilateral triangle. To make the model, draw a 3 inch square, and upon one of the sides draw an equilateral triangle, cut the figure and fold upon the line common to the square and triangle. When drawing from these two models, they may have their parts kept exactly at right angles to each other by placing the ruler upon the desk behind, and the eraser in front of the vertical part. I should not attempt to make the models for Figs. 15, 16, 17, and 18. The pupils could not keep them in good condition in their desks, neither could they be kept from coming to pieces if collected. They can draw the square and circular cards at different levels by placing them upon books or boxes, and thus obtain a knowledge of the truth illustrated by Figs. 15 and 16, that the height of the card or the distance from front to back decreases as the cards are brought nearer the level of the eye. The teacher should insist upon these forms being made as accurately as possible. She should also have a set of models like those of her pupils, only enough larger to be seen easily across the room. Each pupil should have his models, slate, and special pencil. These will be all the materials necessary at first, for no drawings will be made upon paper until the children have had considerable practice.

At first the pupils will require far more individual attention than later, when they have learned to hold the slate to test their drawings, and to hold the pencil to measure the objects. It will take some time and much assistance from the teacher for many to do this correctly, but we find that the pupils of some of the higher grades do not do it much more readily than those of the fourth grade.

Before beginning to draw, the pupils must learn to hold their slates at right angles to their line of vision when looking in any direction. Much trouble has been caused pupils of freehand drawing by the application of the principles of diagram perspective to the study. At the present time, in many of the current books and papers which treat of this subject, the directions given are such as to cause the student to think that he must hold his pencil vertical when measuring heights, the directions being really those for making a plane perspective drawing without the use of the lines and vanishing points which come in the study of the theory. Such directions are very misleading to the pupil of freehand drawing who wishes to learn to record what he sees truly, and not by the distorted picture which results whenever the plane of the picture is not placed at right angles to the line of vision. To test his drawing upon the slate it must be held at right angles to the direction in which he sees the object, and when it is below the eye, the slate will not be vertical, for its upper edge must be as far from the eye as its lower, and the slate will then incline backward from its lower edge. The drawing made upon the slate in this position gives just what the eye sees, and represents the convergence of the vertical edges of objects. This convergence is not given in freehand drawings, but otherwise the drawing upon the slate is practically what the artist would make. If in representing the cards, etc., the student gives the apparent convergence of the vertical edges as shown by the slate, the drawings may be quite satisfactory, but in all except perhaps this first work he should be told to represent the vertical edges by vertical lines, for it is the custom of draughtsmen so to do.[1]

The edges of the slate are bevelled, so that when the slate is held at arm's length they will appear very narrow. When the opposite edges appear of the same width, the pupil may be certain that the slate is at right angles to the way he looks. It will require a well-trained eye to get the position absolutely, but a slight distance out, one way or the other, will do no harm, as when the slate is as nearly in the right position as the pupil can see, it will test his drawing as closely as he can follow; and as his eye is trained to see the form, it will also improve to give more nearly the correct position of the slate.

The pupils should also practise holding their pencils to cover the edges of the desk, those of a book, the door, windows, or any other lines of the room, until they realize that their pencils may be held to cover any lines whatever. In making this experiment the pencil should be held in one hand, the fingers being at the centre, and the pencil at right angles to the direction in which the pupil sees the line that he covers. In this way the pupils will see that the pencil covers a short line which is near or a long line which is distant.

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[1] Teachers who wish a full discussion of the theory of this and other similar points will obtain it in the work on Freehand Drawing, Light and Shade, and Freehand Perspective.

Lesson 1. — Have the pupils place the square cards at the backs of their desks. Place them in the centre and with the edges parallel to those of the desk. Now, have them place the curtain behind the slate so that it appears like a piece of white paper, and then ask them to draw with the special pencil upon the glass a picture which shall represent the card as it appears to them. Have them make this drawing considerably smaller than the real size of the card. When they are satisfied that they have represented correctly what they see, tell them that if the drawing is correct it must appear just like the card, that is, appear to cover it when the slate is held at the right distance from the eye. Ask them to roll up the curtain or fold back the cover so that they can see the card through the slate. Then tell them to hold the slate as they have been taught, and move it back and forth in front of the card to see if they can find any position in which all the lines of the drawing appear to cover the corresponding edges of the card. Many of the children have drawn the real shape of the card, and probably all of the drawings are much too high, or too nearly the real shape of the card. Tell the pupils to hold the slate so that the lower line of the drawing covers the front edge of the square, and to notice the difference between the height of the card and that of the drawing. Ask them to see if the directions of the side lines of the drawing are the same as those of the edges of the card. After they have carefully studied the errors of their first drawing, have them replace the curtain to make the slate opaque, and draw again the picture, profiting by their first experience and making their drawings as near as they can now see the form. The second drawing, when completed, can be tested as was the first, and if the second is not correct, the child can repeat the experiment until he makes a correct drawing of the card.

When the slate is held in front of the card to test the drawing, the pupil must be careful to sit so that he sees the card from the same position that he did when he made the drawing, and if the students do not readily understand what is meant by the drawing appearing to cover the object, they should be asked to rest the slate upon the desk and trace upon it the picture of a card, cube, or other object. Such tracing will show all how the correct drawing appears to coincide with the object.

This first lesson shows the children that the actual and apparent form are very different things. The teacher may emphasize this fact, and interest the pupils by showing them different pictures of the same object, a person or a house. They will see that the appearance depends upon the position of the eye with reference to the object, and they will now do well to hold the square card in different positions and at different levels. They can see that it may appear a straight line, and that between this appearance and the square there may be a very large number of different appearances. This point realized, the child will observe very carefully before making his next drawing, to discover how the object appears, and when this drawing is tested and found incorrect the lesson becomes even more valuable than the first, for it shows that he cannot trust his eyes even when he uses them to the best of his ability. This is a lesson which he has done well to learn, for we have known of many adults who have drawn the actual square or circle instead of the appearance shown by Figs. 1 and 2.

In order to simplify the work for the first lessons with young pupils, it may be well to make the drawing the full size of the card, when the lower line of the drawing will coincide with or touch the nearer edge of the card. In order that this may be done without the card being placed upon a book or otherwise lifted above the desk, the lower edge of the smallest slate made is protected by a narrow band of metal so that the edge of the glass may be placed upon the desk to touch the front edge or point of the card. The actual length of the front edge in such positions as Figs. 1, 5, and 6 may then be marked off on the lower edge of the slate which forms the lower line of the drawing. The pupil has then to draw the other lines. The slate resting upon the desk when the drawing is tested is more likely to be correctly held, and the drawing can be compared very closely with the appearance.

FIGURE 2 represents a circular card. This is to be studied and tested as was the square card of Fig. 1.

FIGURE 3 represents the square card when in the centre and at the back of the desk, with its diagonals parallel to the edges of the desk.

FIGURE 4. — To place the cards for this drawing, have the pupils place them first as for Fig. 3. Then take hold of the card at its right-hand corner and revolve toward the pupil, the nearest angle of the card being held in position by the left hand.

FIGURE 5 represents the rectangular card when its long edges are parallel to the long edges of the desk.

FIGURE 6. — The same card when its short edges are parallel to the long edges of the desk.

FIGURE 7. — The same card, when after having the position of Fig. 5, the left-hand corner has been pushed back a short distance.

FIGURE 8 represents the triangular card when its nearest edge is parallel to the long edges of the desk.

FIGURE 9. — The same card when after being placed as for Fig. 8, the right-hand corner of the card has been pushed back a short distance.

In all the above drawings the nearest line or point of the drawing is found in the lower edge of the slate, which touches the line or angle of the card. The drawings are to be made and tested as explained, except that when the card is at an angle with the edges of the desk, the length of the nearest edge cannot be given the pupil to be placed upon the lower edge of the slate, for the slate will touch only the nearest angle of the card, all of whose edges will appear shorter than their real lengths. For these positions the pupil must experiment as he did at the first lesson when the slate did not touch the object at all.

FIGURES 10, 11, 12, and 13 represent two squares at right angles to each other. The drawings of Figs. 10, 11, and 13 will have their lowest points in the lower edge of the slate, as with the single cards, but with Fig. 12 this will not occur, for the slate tipping back will touch the upper corners instead of the lower. This will also happen with Figs. 15, 16, and 18. The nearest line of the vertical triangle in Fig. 17 will be so nearly parallel to the slate, when it is correctly placed, that the slate will touch either end according to the level of the pupil's eye and the angle at which the triangle is placed.

If the class is not provided with the metal models, the solid objects may be studied in place of the forms shown by Figs. 15, 16, 17, and 18.

When the pupils have drawn all the cards and combinations upon the slate, they will have obtained an idea of the appearance of the cards when lying upon the desk. The cards may then be placed upon books or boxes so as to be nearer the level of the eye, and studied for a short time.

After the above practice, the pupils should make drawings upon paper. These should be made the full size of the card, so that the child may in the simplest way be taught the use of the pencil for measuring proportions. Thus to draw Figs. 1, 5, and 6 have the child measure the length of the nearest edge, and make this line of the drawing its full length. Then let him complete the drawing by eye alone. By this time he should come very near to the correct drawing. When completed in light lines, have him place the point of the pencil at the front edge of the card and tip the pencil back, as he has held the slate when at right angles to the visual ray. Have him place the thumb-nail upon the pencil so that it just marks the position of the back edge of the card. The distance from the thumb-nail to the end of the pencil is the apparent height of the card, and the drawing is tested by this dimension.

The pupil may now be shown how he may measure the apparent length of the edges in Fig. 7 by placing the pencil parallel to the back of the desk, its point at the nearest angle *a*, and marking with the finger or thumb the point on the pencil directly under angle *b*. The distance from the angle *a* to this point, set off horizontally, must give the point on the drawing which is just under *b*.

The pupils will have little difficulty in understanding how to take and apply these measures which will assist them later to use the pencil in measuring the proportions of objects at a distance.

The children will be helped to see the errors of their drawings if they draw lightly all lines whose ends are not the same distance from the eye, much longer than their real lengths, and they should be asked to do this, always continuing the lines in the direction of their farther ends. They have practically discovered that parallel retreating lines are not represented by parallel lines, but by lines which converge, and they have had practice enough so that if the lines are drawn long, they will probably discover any serious discrepancies in the directions of the lines which represent parallel edges.

When the drawings upon paper have been carried as far as the pupil can see, and tested by pencil measurements, the glass slate may be placed over the drawing which, when traced upon the slate by the special pencil, may be used to test itself in the usual manner.

When the measurements upon the pencil are taken, the pupil must be very careful to have his head in the position that it occupied when the drawing was made, otherwise the measurements will not agree with the appearance.

Grade V.

FIGURES 19 and 20 represent different positions of three squares. Figs. 21 and 22, the views of the interior of a triangular prism, obtained by removing one rectangular face. Figs. 23 and 24, the same of a shorter prism. If the metal models are not used, these forms will be too difficult to obtain in paper, and the children may begin upon the solids, taking different positions of the cube, square plinth, triangular prism, square pyramid, square prism, the cone and the cylinder, as shown by Figs. 25 to 43 inclusive. All the objects except the last two may be drawn in many different positions. In positions other than those shown by Figs. 32 and 40, the cone and cylinder are difficult to draw, but if the teacher finds the class able to draw them, so much the better.

In all of this work the drawings should be made as explained in the work of Grade IV., the pupils first making drawings upon the slate by eye alone, no measures or tests of any kind being employed except that when the drawing has been carried as far as can be seen, it is to be tested by removing the screen from the back of the slate and holding the slate in front of the object. The drawings may be the full size of the object, or smaller, as the teacher finds best. If made full size, there will be difficulty in placing the drawing upon the slate so that the slate may touch the object at the nearest angle, and rest upon its lower edge on the desk at right angles to the line of vision; but it is not necessary for the slate to rest upon the desk in this way if the pupils can hold it steadily.

To assist them as much as possible in this first work, before drawing, the slate may be placed in position upon the desk, and touching the object at its nearest point; this point can then be marked upon the slate, and the curtain then placed behind the slate, the child drawing the object by eye, but in the position on the slate indicated. If the drawings are a little smaller than the objects, this difficulty does not arise. The pupil has then to test his drawing by holding the slate in the usual manner, *being careful that its long edges are horizontal*, and moving it back and forth until he finds the position in which the drawing most nearly covers the object. In this position the differences between his drawing and the appearance of the object are to be noted. This practice is considered better than that first described, but if the children are not yet able to hold the slate easily and steadily enough, the first use in which the position of the nearest point is indicated may be allowed until they have had more practice.

After the drawings upon the slate, drawings upon paper should be made. This work, in all the grades, should be by eye alone at first. When complete, they may be traced upon the slate and tested as already explained.

After all this practice in drawing from cards and objects upon the desk in front of him, the pupil will draw them fairly well. The objects should now be studied when they are on the desk at his side. He must understand that a line upon the slate which is parallel to its long edges represents a horizontal line that is in the position of the long edges of the card of Fig. 5, and that any horizontal line whose ends are the same distance from his eye appears a horizontal line to him. He can see that when one end is farther from the eye than the other, as *a*, *b*, Fig. 7, the line does not appear horizontal, and his study of the cards and objects has made him realize that parallel edges which extend away from him appear to come together or converge. The teacher may here speak of their appearance in the two rails of the railway tracks, and lead the child to see that if the lines are long enough, they will practically meet or vanish at a point. The pupil must always hold his slate at right angles to the way he looks, and doing this, he will see that the lines of the desk at his side do not appear horizontal. In fact, if the slate has been rightly used by him, he will never make the common distortion of a parallel perspective drawing of a cube.

At this time it will be well for the student to discover that parallel lines which are not foreshortened and which are at different distances from the eye always appear unequal, the nearest line appearing the longest, Figs. 1, 5, 6, and 10, and others showing this; also that of vertical lines unequally distant, the nearest appears the longest, Figs. 11, 12, 15, 18, 26, and 27, and others showing this.

The student should also see that equal distances on any line appear unequal, the nearer appearing the longer: for example, notice the foreshortened diagonal in Fig. 3, the base of the triangle in Fig. 14, and other lines in following drawings.

It will now be well to have the class draw from large cards and objects placed at a distance. A few simple, common objects will serve as well, if not better than large models, which the teacher may not happen to have. Objects such as those illustrated by Figs. 44 to 49 inclusive will lead them to see that they are acquiring the ability to make pictures, and the earlier such objects can be used the better. The teacher of even Grade IV. may find, at the end of the course illustrated, that it is possible to use simple forms of this nature.

Grade VI.

If the metal models are not used, the class is to cut from paper cards of the following sizes: —

regular hexagon, circumscribing circle, 5 inches in diameter,
regular pentagon, sides 3 inches.

These cards are to be placed at the centre of the back part of the desk and studied as the similar forms in Grades IV. and V.

FIGURE 50 represents the hexagonal card when two edges are parallel to the back of the desk. Fig. 51, the card when two edges are perpendicular to the back of the desk. Fig. 52, the card when, after being placed as for Fig. 51, it has been swung to the right about the nearest angle. While drawing Fig. 51, the pupil will notice that C is on the level of A, and D on the level of B, and that the lines connecting these points give spaces 0–1 and 3–4 on the vertical centre line, which together are about equal to 1–3, or one-half the whole height of the drawing; but it is not important to discuss the point at this time.

FIGURE 55 represents the pentagon with the nearest edge parallel to the back of the desk, and Fig. 56 with the farthest side parallel to this edge of the desk.

FIGURES 53, 54, and 57 show the polygons when held by the wires in the positions of the bases of the solid prisms. These objects are to be studied as has been explained in the work of the previous grades.

If the metal models are not used, these forms can be made by fastening the cards to small pieces of wood; but this involves very nice work, and instead of attempting to make these objects, the solid objects may be used.

FIGURES 58 and 59 represent the hexagonal pyramid when standing upon its base. Figs. 61, 62, and 64, the pyramid when resting upon a triangular face upon the desk.

FIGURE 60 represents the hexagonal prism when vertical, and Fig. 63, the prism when resting upon a rectangular face upon the desk. In this position the class should notice that points 1 and 2 are directly over points 3 and 4.

When these objects have been studied upon the glass slate, the drawings are to be made upon paper. When drawn by eye alone, they may be tested by taking the proportions of the object with the pencil. This should be held to touch the nearest solid angle of the object, and with the pencil point covering the extreme left-hand point of the object, or if it cannot cover this point when held horizontal, letting the end come just under the point of the object as at L in Fig. 62; the right-hand point of the object being marked upon the pencil by the thumb-nail, its apparent width is thus determined.

The entire height of the object is given upon the pencil by holding it to touch the nearest angle of the object, its lower end covering or on the apparent level of the lower angle of the object, and the thumb-nail covering the highest point of the object; or when this cannot be done, the level of the point marked upon the pencil as at H in Fig. 62. Of course, in both positions, the pencil must be at right angles to the direction in which the object is seen.

When the drawing upon paper has been made as correct as can be seen, it may be finally tested by tracing it upon the slate, and holding it in front of the object.

Interesting and valuable drill in judging proportions may be given now by having the class draw upon the slate the appearance of large squares and other cards of varying proportions which are placed at the front of the room. They can also draw pictures of the panels of the doors, walls, blackboards, the window panes, sash, or the whole frame, etc. By drawing from objects of varied nature in different positions, they will see that the picture is the real shape of the card or space when they are directly in front of it, but that when not thus situated the lines of the drawing converge, and the picture is different from the actual shape.

Figure 65. — If the tin models are not at hand, the

solid cylinder may be placed in the position indicated. When the drawing has been made upon the slate in the usual manner, it is to be tested. The class will discover that the vertical ellipse which they have probably drawn does not cover the circle, which appears an inclined ellipse. They may here be shown that the ellipses representing the horizontal circles which they have drawn are at right angles to the vertical centre line of the drawing. This centre line represents the axis or centre line of the object, and upon investigation they find that the axis of the ellipse representing the base of the cylinder appears at right angles to the axis of the cylinder. Placing the object in various positions will show that this is always the direction of the ellipse which represents the base of the cone, cylinder, or any other object.

FIGURES 66 to 73 inclusive are groups composed of the simpler solids. The objects are to be arranged on the desk at the back as usual, and the drawings made by eye upon the slate. Here it will be better to have the drawings enough smaller than the objects to allow the pupils to sit back as far as possible. The drawing will then be tested by moving the slate back and forth until the drawing comes nearest to coinciding with the appearance. In this position the errors are to be noted, and then the pupil is to try again until the correct proportions are secured. In this work no attempt should be made to produce a finely finished drawing. This is impossible upon the slate, nor is it desirable that anything more than the correct directions and proportions should be obtained.

When the groups have been drawn upon the slate, finished drawings upon paper should be made. To test these drawings without the use of the slate, the proportions of the group may be taken upon the pencil, as explained upon page 63. He may also be shown how to use a thread, holding about one foot between the fingers. When the arms are equally extended and as far as possible, the thread will be at right angles to the line of vision. If now it is held horizontal, that is, so that it will cover the back edge of the desk, and raised or lowered to pass over the different angles of the group, it will show the level of the points with reference to the front edge or line of the group; and if when held in front of any point, as *a*, Fig. 69, the thread cuts the opposite outline of the group at any point as *b*, a horizontal line in the drawing through the point *a* will, if the drawing is correct, intersect 1-2 at *b*. The thread may be used as a plumb-line to take verticals through the different angles. It may also be held to cover any line as 3, 4, to see where it intersects the opposite outline. It may also be held to cover opposite points, as 5 and 6, in order that the apparent intersections of the thread with the edges between may be seen.

After the pupil has carried his drawing as far as he can see, it will be well for him to apply these tests. If the drawing is made to agree with them, when it is traced upon the slate for the final test, it will probably be found to be practically correct. As the pupil advances, he will depend more upon such tests and less upon the slate. The drawings upon paper should be carried on as explained on page 36.

After this study from objects directly in front and upon his desk, the pupil should draw from groups which do not have horizontal lines behind them which appear horizontal. To test the appearance, he must face the group, and hold the thread or pencil or slate just at right angles to the way he looks and horizontal. The groups for this work may be of larger models or of common objects similar to those illustrated by Figs. 74 to 79 inclusive. These groups may be arranged upon chairs between the aisles, or as explained upon page 31. The positions of the objects may be marked upon a sheet of paper, so that if not completed in one lesson, the group may be placed upon the paper and the paper upon the board as at first.

Before commencing these drawings, the class should be taught to compare proportions of distant objects upon the pencil. An easy way to do this is to have rectangular cards of large size and different proportions. These may be placed so that they appear their real shape to the pupils. Take, for instance, a rectangle whose length is twice its width; let the pupils hold their pencils at right angles to the way they look and and so that the end of the pencil covers one side of the card. If the thumb-nail is made to cover the other side, the apparent width is given upon the pencil, and if the pencil is turned in the direction of the length, the distance upon the pencil will be found to cover one-half the length of the card, thus showing that the card is twice as long as it is wide. A few experiments of this nature will show the pupil that careful work will give correct results. Directions are sometimes given to have the drawing made the actual size of the distances covered upon the pencil. The object or group is generally so distant that the drawing thus made will be very small. However careful the students may be, the pencil will not be at the same distance when the different measures are taken, and this way of proceeding can hardly fail to give poor results. If they cannot understand that their drawings are to be made of the proportions indicated by these measurements, and cannot obtain them in a drawing of reasonable size, they should postpone this way of measuring until they are older, but those who have had the practice of the preceding grades should be able to do this without much difficulty.

When the lines to be measured are foreshortened, the students must be very careful not to hold the pencil parallel to the lines. They should practise holding the pencil until they can hold it to cover any line, and yet have the ends of the pencil the same distance from the eye.

It will not be possible always to test the drawings of such groups upon paper by tracing them upon the glass slate, for the drawings will be of such size that the slate cannot be held far enough from the eye to have the lines cover the objects. In the case of large objects this may be done, but small objects at a distance can only be tested by the pencil and the thread, as explained on page 66.

The slate can, however, be used to test such a drawing by making upon it a drawing small enough to cover the group when the slate is held by the hands. This drawing gives the proportions and directions, and after the pencil drawing has been finished and tested as far as possible by other means, it may be made if desired.

The most valuable use of the slate from now on is to drill the eye to see proportions. This is best done by drawing from large objects, the cone, cylinder, square prism, etc., or if these are not at hand, from large cards. The solids, however, are preferable, and boxes or other common objects will answer in place of the exact models. If the class is made to draw quickly by eye alone the proportions of these objects, and then to test by holding the glass before the object, they will soon learn to see very truly.

Grade VII.

The pupils should practise frequently upon the slate, making hasty indications of the proportions of the cards or objects as explained above.

The single cross, double cone, steps, and similar models may be studied separately.

In Fig. 85 have the class see that the lower base appears the wider, and that the invisible end of the cylinder must always appear proportionally wider than the visible.

Arrange groups similar to those sketched, upon chairs or the model rests, and have the pupils study them in the way explained in the notes of the preceding grade.

At this time the class may be asked to finish their drawings, as explained on page 40, Part II. Be careful to have them understand that when what they see does not give a satisfactory impression of the facts, they must change the accenting until it does this.

Grade VIII.

Continue quick sketching upon the slate to obtain the proportions of the cylinder, cone, or any other objects.

The various frames, rings, double cross, and other difficult models may be studied singly.

In the frames have the pupils notice that the inner polygons have their angles in the diagonals of the outer figures, and that the same distance or width of face appears unequal in different positions.

In the ring, Fig. 97, the class is to see that the distance from 1 to 2 is the same perspective part of the entire short axis, that the distance 3–4 is of the long axis.

In Fig. 96 have them draw the short lines long, to see that they have the same vanishing point as the long lines to which they are parallel.

In vase forms similar to the tea-pot in Fig. 103 the class should notice that the curve of the body of the base does not appear to end at the end of the ellipse which represents the bottom of the neck. The teacher should call the attention of the pupils to such points as this, and thus assist them to make drawings which are correct in detail as well as in proportion.

No directions other than those given are necessary for the work from groups and common objects.

Grade IX.

Continue the sketching upon the slate to obtain the proportions of the cylinder, cone, etc.

FIGURES 104, 105, 106, 110, and 111 are groups of the more difficult models and common objects.

These groups, as all similar ones in the preceding grades, can be drawn of small size upon the glass slate for the training involved, and also to test the larger drawings upon paper as explained under Grade VI.

Owing to the difficulty of placing objects above the level of the eye so that the class may draw from them, nothing has been said about such work in the lower grades. If, however, the teacher of the seventh or eighth grade can arrange simple objects on shelves or otherwise, a few drawings of large cards or simple objects such as those illustrated by Figs. 107, 108, and 109 should be made; certainly the students should have this study before they leave the school. I have found many students, even among graduates of High Schools, who, when under examination for an advanced school and drawing for the first time from an object above the level of the eye, have represented both the top and bottom of the object.

FIGURES 112 and 113 are interiors, and show what, without doubt, some of the students will be interested enough to do at home. There is, of course, no limit to the variety and extent of the work which may be done in this way, and teachers should encourage their pupils to do this work, and also to make such drawings as artistic as possible by studying the rendering of artists' drawings in the papers and magazines.

The teachers whose students, even in the upper grades, are working laboriously upon perhaps one or two drawings per month, may say that this is an impossible program of work. It will be impossible to most classes until they have had the training given by the slate in the lower grades, but those teachers who will try the plan, and force and encourage the pupils to work rapidly, will be surprised to find how much they can do after they have once started. In nine weeks' time, the lessons amounting to thirteen hours' instruction, students of the fourth and fifth grades who had never drawn from geometric forms were able to make fourteen good model drawings. They were Figs. 1, 2, 3, 4, 5, 6, 8, 11, 26, 28, 30, 50, 51, and 55. Plates I., II., and IV. In the same time older students were able to train their eyes so as to make in an examination of fifty minutes a drawing of the hexagon, Fig. 51, also Fig. 11. This was the work provided for the time, but every pupil except one in a class of about forty was able to make the third drawing of the cube, Fig. 27. Nearly all were first-class drawings. They were made by eye, the slate not being used at all. Such a result warrants as possible the course which is arranged, and teachers who will use the slate a little themselves, so as to be able to direct their pupils, will find that they can accomplish a great deal of practical work even with but forty-five minutes twice a week; and though it may not be possible for all classes to do as much work as is shown on the plates, it will be possible for all to do something practical, and very much more than at first seems possible to those whose students have never acquired the power to work in a rapid and sketchy manner.

MODEL DRAWING THEORY.

Vertical lines are to be represented by verticals.

Any line whose ends are unequally distant from the eye is foreshortened and appears to vanish.

Parallel retreating lines appear to converge or vanish toward a point called their vanishing point.

The nearer of two parallel and equal lines which do not vanish appears the longer.

Horizontal retreating lines above the eye appear to descend or vanish downward. Those below this level appear to ascend.

Parallel retreating horizontal lines appear to vanish at the level of the eye.

If one of the nearer sides of a square vanishes toward the left, the other vanishes toward the right.

A horizontal circle above or below the level of the eye appears a horizontal ellipse.

The foreshortened bases of the cylinder appear ellipses whose long axes are at right angles to the axis of the cylinder. The invisible base appears an ellipse which is proportionally wider than the ellipse of the visible base.

Concentric circles appear ellipses whose long axes are parallel but do not coincide, and practically the apparent distance between the ellipses measured on the short axis, is the same perspective part of the short axis that the distance between the ellipses measured on the long axis, is of the entire long axis.

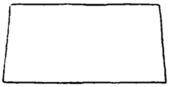
NOTE.

THE following drawings are given simply as illustrations of the course of work. They are not intended as diagrams to illustrate perspective principles, but if teachers are not prepared in the principles of Model Drawing, a study of the drawings in connection with the few simple statements of principles will probably give the teacher of the lower grades all the assistance which she needs.

The work suggested for the Grammar Grades consists of outline only. The drawings given are thus largely of this nature. On each plate a few drawings suggest the way in which they should be made, as explained on page 35, part II. A few of the drawings are not kept strictly to outline, but average students will do well not to attempt shading until they can make good outline drawings, and have had practice in light and shade. Pupils who are interested and have ability will by use of a sketch-book soon discover how working according to the method explained in part II., will assist to a less conventional treatment, and such students may be able to do work like that indicated by figs. 103, 110, and 111, or even more in the direction of light and shade. The average pupil though must be satisfied to study in outline until he enters the High School.

GRADE IV.

PLATE I



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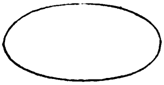

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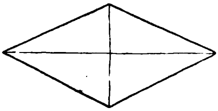

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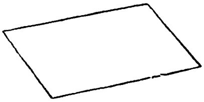

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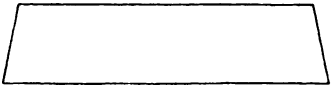

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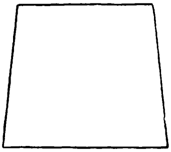

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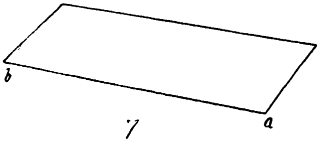

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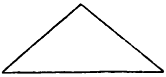

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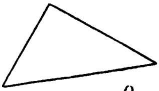

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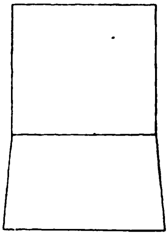

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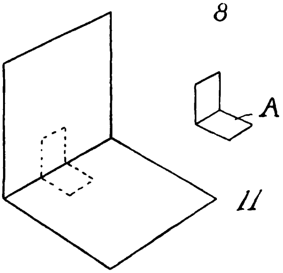

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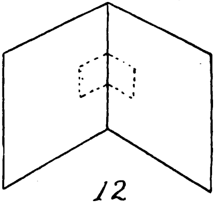

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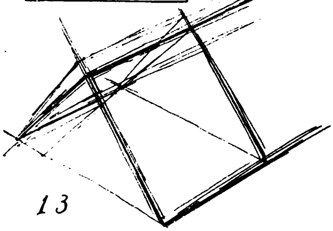

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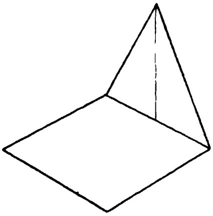

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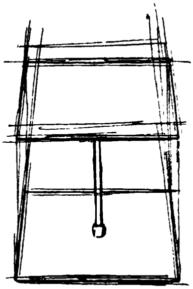

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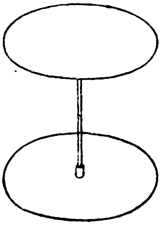

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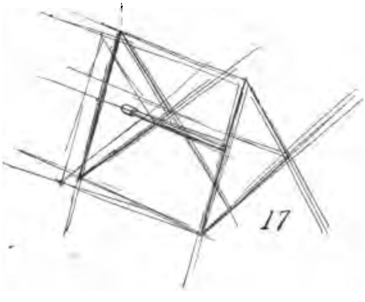

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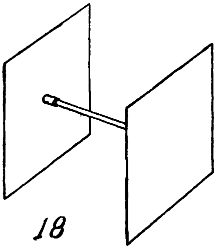

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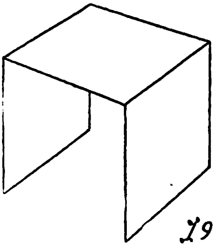
GRADE V.

PLATE II.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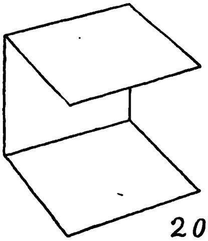
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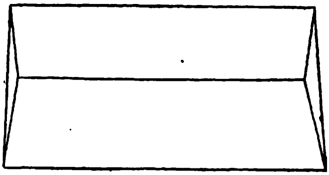
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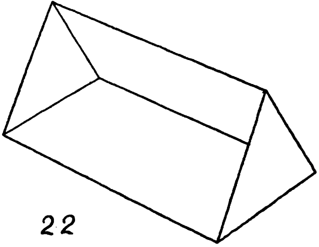
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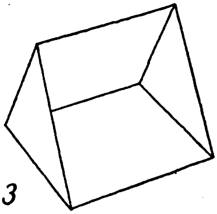
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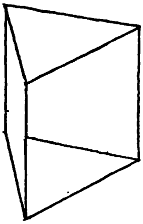
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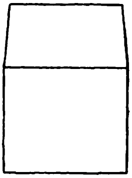
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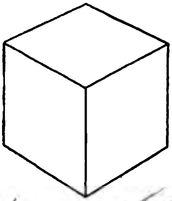
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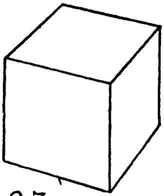
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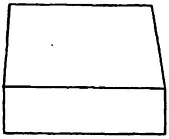
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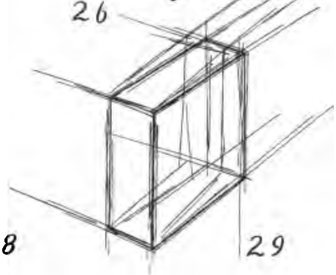
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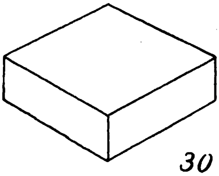
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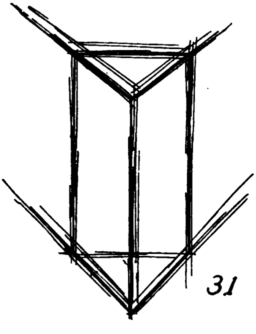
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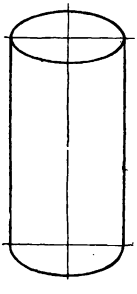
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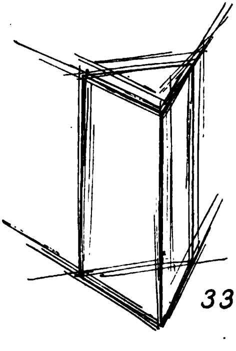
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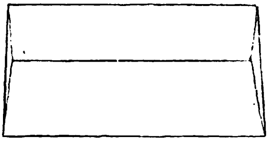
GRADE V.

PLATE III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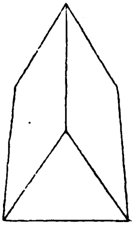
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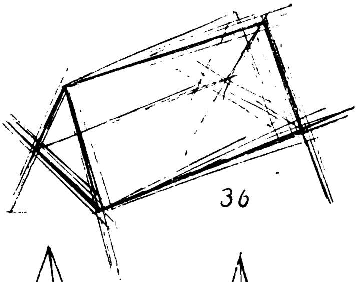
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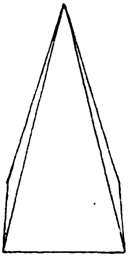
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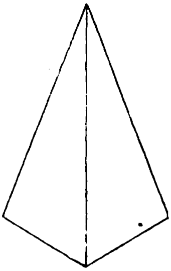
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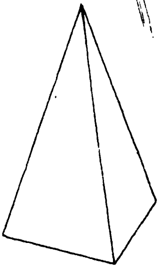
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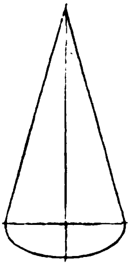
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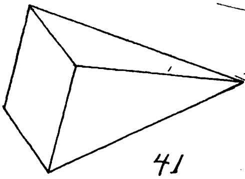
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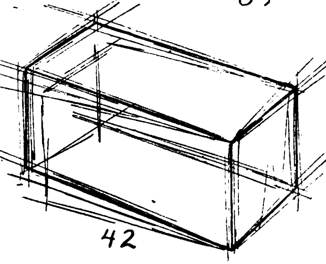
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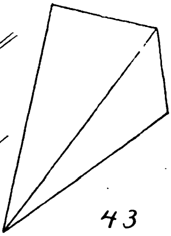
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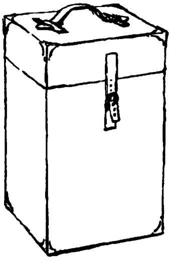
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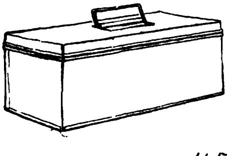
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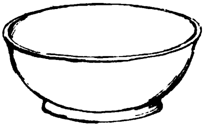
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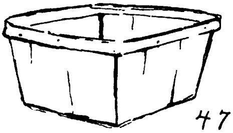
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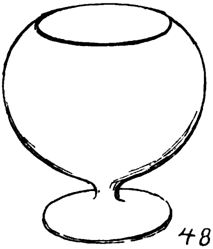
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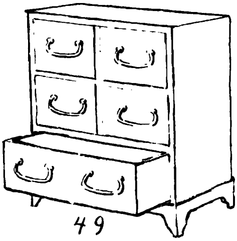
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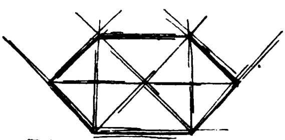

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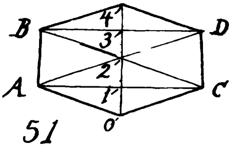

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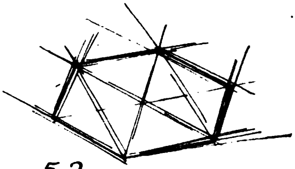

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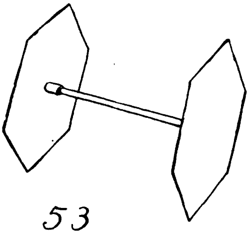
PLATE IV.



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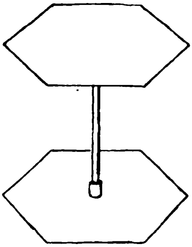

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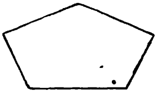

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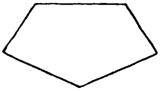

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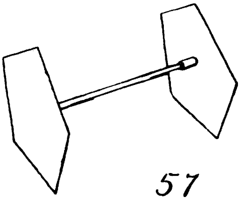

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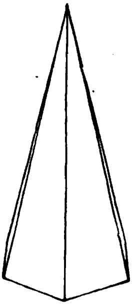

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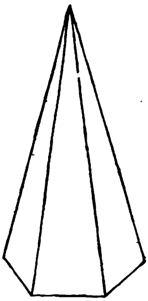

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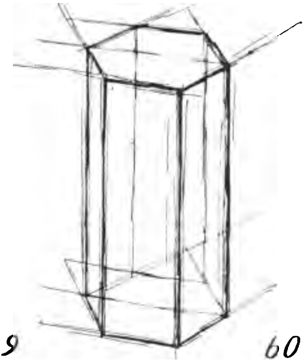

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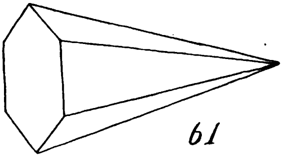

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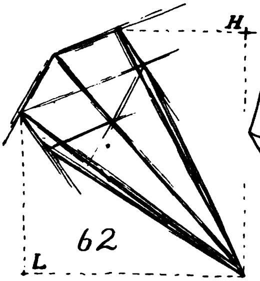

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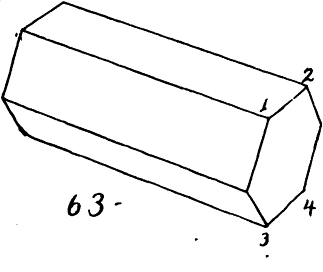

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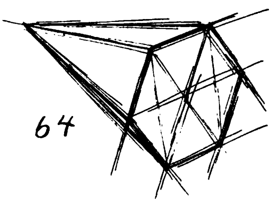

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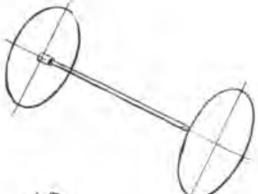
GRADE VI.

PLATE V.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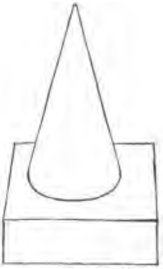
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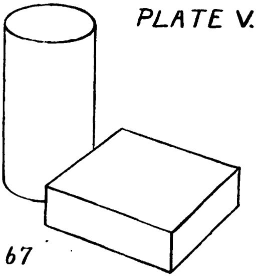
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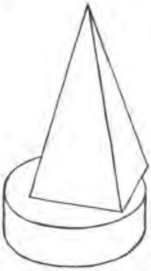
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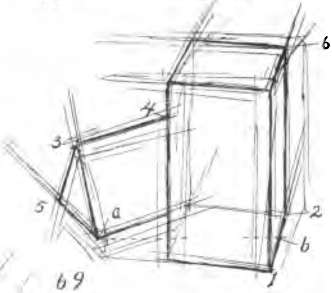

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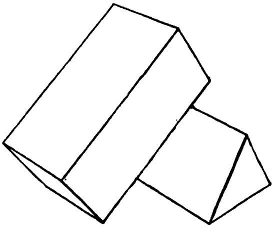
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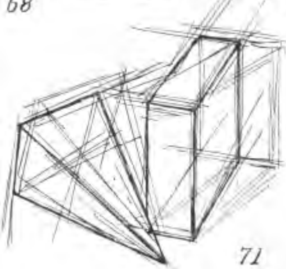
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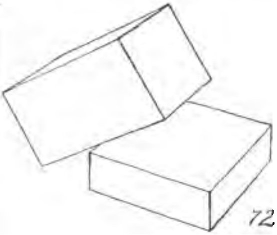
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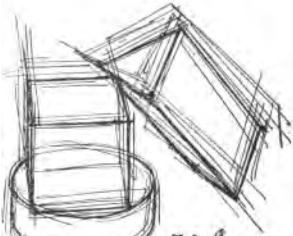
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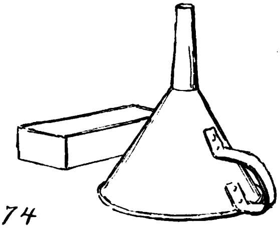
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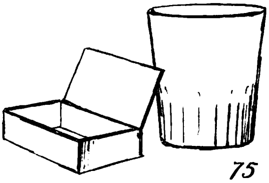
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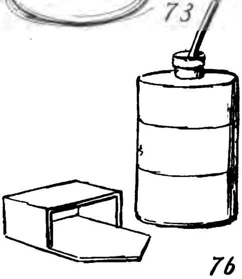
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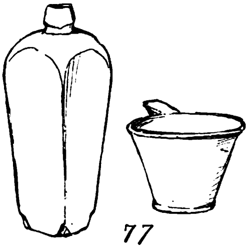
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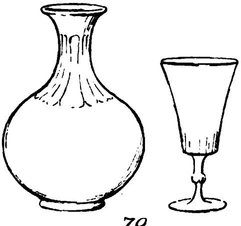
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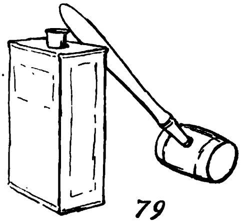
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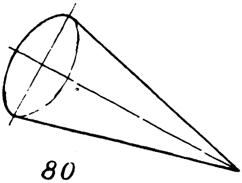
GRADE VII.

PLATE VI.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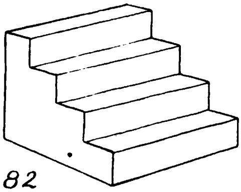
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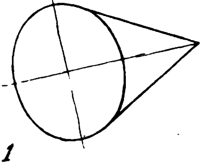
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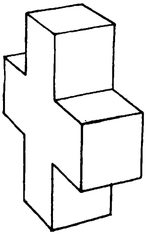
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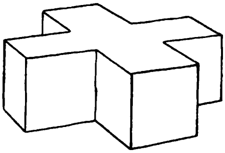
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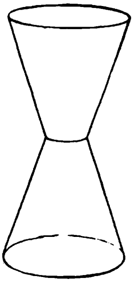
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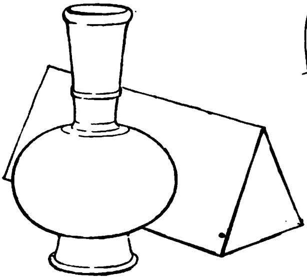
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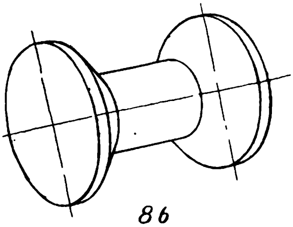
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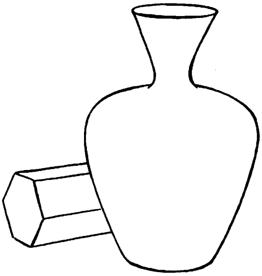
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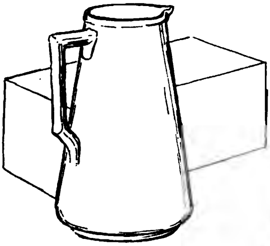
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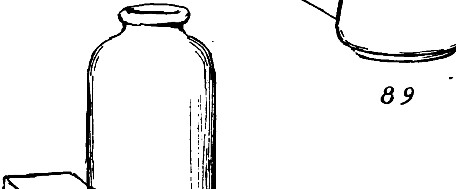
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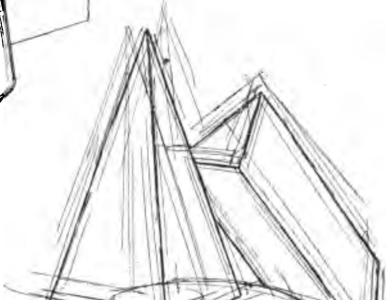
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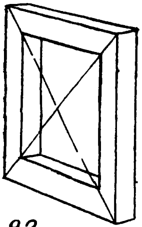
GRADE VIII.

PLATE VII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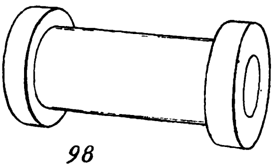
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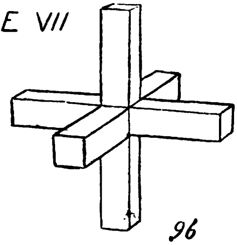
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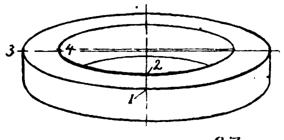

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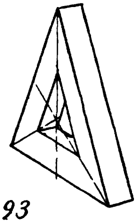
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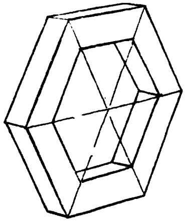
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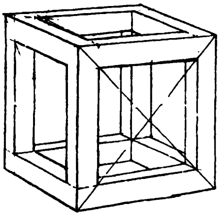
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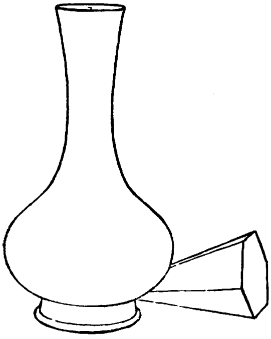
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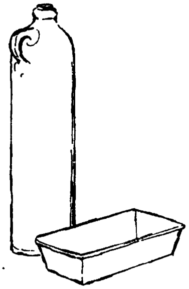
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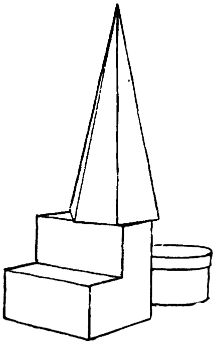
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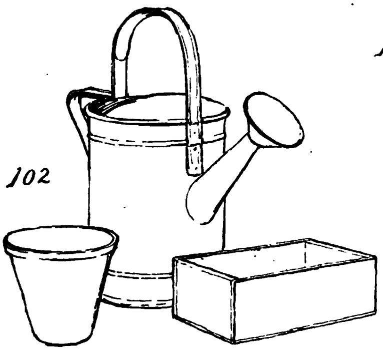
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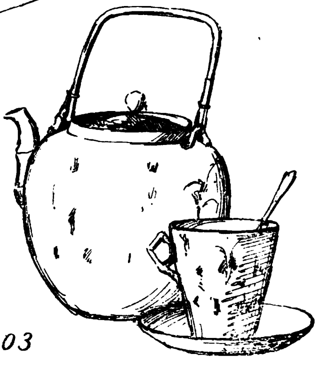
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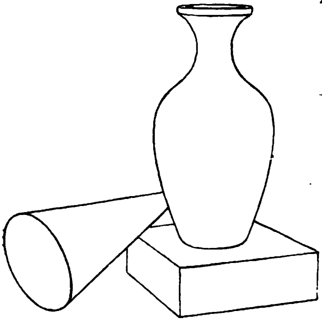
GRADE IX.

PLATE VIII.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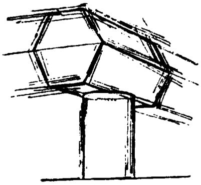
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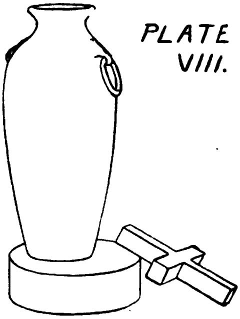
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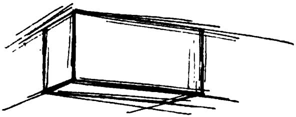
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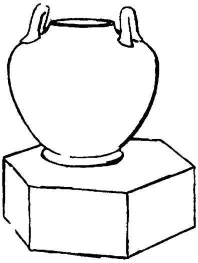
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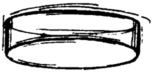
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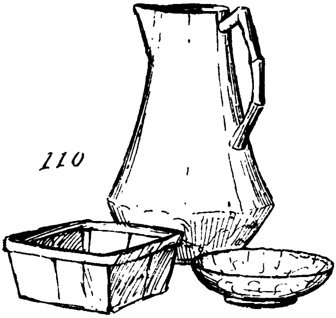
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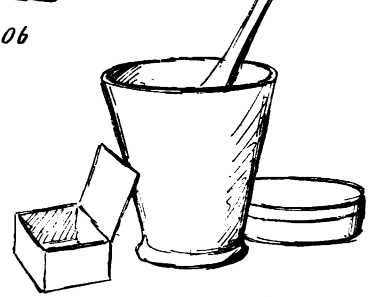
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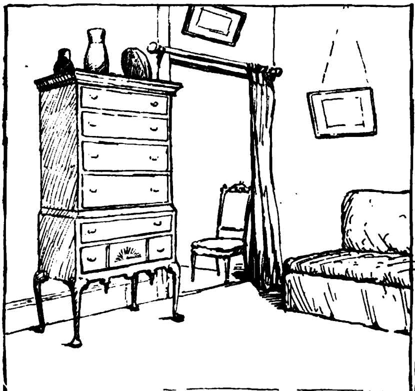
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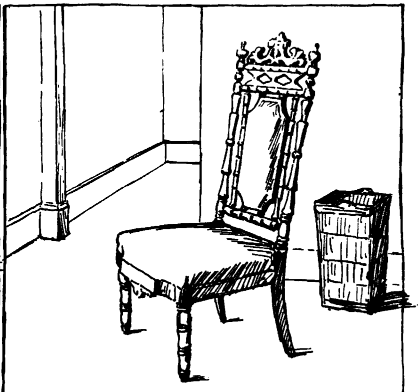
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Suggestions for home sketch-book work.

PART II.

Consisting of Chapter II. of the book "Freehand Drawing, Light and Shade, and Freehand Perspective."

References to figures and pages not in this chapter are in the other chapters of the above-named book.

CHAPTER II.

OUTLINE DRAWING.

IT is often said that there are no outlines in Nature. In a way this is true, but it cannot be understood to mean that form is unnecessary or that it may be slighted. The student cannot learn to paint or to make pictures in any medium, without drawing the forms of the objects. The defining of the lights and shades and the various bits of color which are seen in Nature is necessary to give solidity and character to a picture, and it is useless to think that anything can be accomplished with color or light and shade if approximate representations of form cannot be made.

Every object has definite form and size, and though it may not be outlined, it has boundaries. Although the representation of objects in outline only, is at best a conventional and imperfect means of expression, so far often as even form is concerned, the student can be taught to observe effects, and may often succeed in conveying a fair impression of the character of the object, and of varieties of surface and texture. He will find that the study of appearances and their representation, as fully as possible, even in so simple a way as outline drawing, will in great measure prepare the way for work in light and shade and color. The whole question is simply one of seeing, and the student should not trouble himself over technique, as his only aim should be a true representation of Nature.

The most important points in free-hand drawing are freedom, directness, and accuracy. It is difficult to give directions which will produce these results, as individuality will prevent all from working in a uniform way, and handling and technique are of little importance. Since the production of truthful drawings is the end desired, it is of no consequence that such drawings are produced by different persons in different ways, but it may be well to give a few general directions.

It is most important that the pencil should be held lightly, and the first lines of the drawing *suggested* freely and rapidly. The paper should be not less than eleven by fifteen inches, and the drawings should be large, as small drawings will produce a mechanical way of working. A long pencil will assist to freedom of motion. It may be held as a stick of charcoal between the thumb and first two fingers, and as far as possible from the point.

The paper should be fastened upon the board with its edges parallel to those of the board. If the edge of the paper is not straight, a horizontal line may be drawn near its lower edge, so that directions may be referred to this line. Before attempting to draw any object, the student should acquire the freedom of motion which is necessary to good work, by drawing lines in all directions. Curved lines may be produced by swinging the pencil from the wrist, elbow, or shoulder; and straight lines by a motion of the entire arm. These movements should be practised until lines can be drawn instantly across the paper in any direction. This free motion is most important for all sketching, but in finishing or accenting a drawing, whose proportions have been thus sketched, more pressure will be required, and the pencil may be held more firmly and nearer the point.

The first subjects may be the geometric solids, or any common objects. I will explain the way in which these may be studied, by making a sketch of a box with its cover thrown back. (See Fig. 4.)

First, nearly close the eyes and try to see the box, not as a solid, but as a silhouette, the outline of the mass of the box against the background being what should first be carefully studied. A little practice with the eyes nearly closed will enable one to see the mass in this way. (Fig. 5.)

In order to realize the directions which the edges appear to have, lines may be drawn in the air, by moving the pencil point so that it appears to cover the edges. When this is done, care should be taken not to move the pencil away from the eyes, that is, in the actual direction of the edges, but to keep the pencil point where it would be if it were held upon a pane of glass placed directly in front of the student. This test is the most valuable of all, because it is the simplest and easiest to apply. It is really the same as the use of the thread, explained on page 74, and nearly all other means of testing will at last be discarded in favor of this first and simplest.

After careful study of the mass, its outline may be lightly sketched, no measurements of proportion having been made.[1] The aim is to train the eye to see correctly. In order to do this, the student must depend upon his eye, and put down its first impression, rather than the results of mechanical tests of proportions. He must first draw, and then test by measuring.

When the outline of the mass has been sketched, the inner lines may be drawn, and the result carefully studied to see that it agrees with the appearance. When it is as near as can be seen, the drawing may be tested by measuring the proportions as explained on page 68. If the sketch does not agree with these tests, it must be changed. All changes should be made, not by erasing, but by drawing new lines, and the drawing should be carried on in this way, until the correct lines are found.

The first lines must be very light. As changes are made, the strength may be increased to distinguish them, until the correct line is secured. The drawing having been changed to agree with the measurements of the whole height and width, and tested by moving the pencil point to cover the edges, it will be well to test, by means of vertical and horizontal lines, taken through the different angles of the box. Thus, drop the pencil point vertically from point 1, and see where it cuts the lower edge, and carry the point horizontally from point 2, and note its intersection with the front edge. The pencil may now be made to continue the apparent directions of the edges A, B, C, etc., until the points where the continued lines appear to intersect the opposite outlines are noted. These tests may also be applied by the pencil used as a straight edge and held horizontal and vertical, and to appear to coincide with lines. These tests, if carefully made, will produce a drawing which is practically true, and should be depended upon. The first measurements of height and width should be very carefully taken. Distances which are nearly equal, as EF and FG, may also be compared, but as a rule, few measurements of proportion should be made, as short distances, or short with long distances, cannot be compared with sufficient accuracy to be of any value. (Fig. 6.)

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[1] These lines are approximate, and little time should be given them. See page 15.

The thread may be used instead of the pencil for tests, as explained on page 74. The thread appears a fine line, whose intersections with the edges may be easily placed, so that until the eye can be depended upon the thread is preferable to the pencil.

It is most important that all changes be made not by erasing, but by drawing new lines. Erasing and keeping but one line from first to last will surely produce a hard and inaccurate drawing; and although it may finally be made to agree with all the tests, it will still be lacking in spirit. It is difficult at first for most students to draw lightly enough to secure the correct lines without too great heaviness, but it is better, rather than to erase, to throw the drawing away and start anew until the result can be secured without having lines so black that they cannot be easily erased.

The reason for working in this way is that we wish the student to depend, as far as possible, on his eyes. If he erases and has one line from the start, unnecessary time is given to the drawing, and he will hesitate to erase his lines. If light lines are drawn and not erased, but others drawn as soon as there is doubt about the first being rightly placed, the student is much more free to change as each suggestion occurs, and toward the last he has his choice of the various lines already drawn and can experiment freely.

This is by far the quickest and most accurate way, and prepares for rapid and truthful sketching. It is difficult at first for the student who has been taught the mechanical way of drawing one line at a time, but he will not have to draw very long in this way before he will be able to produce truthful sketches without drawing many unnecessary lines.

There is not much choice of pencils for this part of the work, but it is well to use always as soft a one as the nature of the work will permit. As no pressure should be used, the lead making at first as light a line as can be seen, and as all lines except the correct ones must be erased, there is no reason why the student who has difficulty in using a soft pencil should not use a hard one until the drawing is ready to accent.

When the correct outline has been found, it is necessary to finish the drawing. The paper must first be cleaned, all the lines except the last being erased. The easiest way to reserve these lines is to make them stronger than the others so that they will show faintly, when the eraser has been passed over the paper, removing all but an indication of the result.

The drawing may now be accented with a soft pencil. The pencil may be held more firmly, and the lines drawn of their proper strength by one touch, the attempt being not to produce a fine even line in imitation of a ruled one, but rather a line of medium strength which will convey the idea of straight edges. For the present it is better for the lines to be made of uniform strength, with no attempt at gradation, or the frequent conventional accenting of the nearer edges by heavier lines. This point will be considered later, but we wish now to advise the student, if he is already familiar with it, to forget it as quickly as possible, and to finish in lines of one strength or as explained on page 44.

The student should draw from various objects in different positions, until he is able to see them very nearly correctly at first. The time required for this will depend wholly upon the pupil and the care with which directions are followed.

Groups.

After the practice from single objects, several should be arranged in a group. The student will probably attempt to draw the objects one at a time, taking first the prism A, Fig. 7, next the vase B, then the cylinder C, and last the frame D. The objection to this way of proceeding is that as the objects are drawn one at a time, until the last is completed, the proportion of the whole group — that is, its greatest height in comparison with its greatest width — cannot be seen. Indeed, this is often not even considered, the student taking it for granted that since he measured and tested each object as it was drawn, the single objects are correct, and therefore the group. But from what has been said it will be seen that each object is likely to be a little out of proportion; indeed, we may say is sure to be so. This being the case, the errors are multiplied; and if the height and width are compared, the proportion is found to be far from correct. It is a principle generally acknowledged that in all teaching the whole should be presented before its parts, and it cannot be contradicted that adding one object to another until finally the patchwork is complete is an uneducational way of proceeding. Practically it is also most unsatisfactory, as with each object the difficulties increase, and at last it becomes impossible to place the drawings where they belong. The only logical way is to draw the group all at once, first considering it as a mass and blocking in its proportions by lines passing from the principal points, Fig. 8. When these lines have been drawn and considered, they may be tested by measuring the whole height and width, and the directions tested by use of the thread or pencil as explained.

A good plan is, as soon as the proportions have been determined, to draw horizontal and vertical lines forming a rectangle enclosing the drawing, and to be careful that the drawing is kept within these lines. The proportions of the whole group being thus determined as nearly as measurements can determine, the objects may now be sketched by eye, the most important lines being drawn first. These are the lines whose positions and directions are most easily seen. They are the longest lines, lines of one object which are nearly continuations of those of some other object, and lines which are brought out distinctly by shade or shadow. It is evident that in this way the drawings of the different objects are proceeding at the same time, and the shorter and less prominent lines being drawn last, the group may be said to be drawn all at once, or as if a single object having many parts.

While drawing, the student must think of the tests, applied by the thread, of horizontal and vertical lines, and of continued lines; and drawing in the air by passing the pencil point to hide the edges to be represented, will help greatly. The object should be studied in this way and changed as often as found incorrect, until the eye can do no more. It is now time to apply systematically the tests explained by the drawing of the box.

The first test is to compare the height and width of each object of the group, and also to compare these dimensions with those of the whole group. This test is the most important, and should be very carefully taken. Slight inaccuracy can hardly be avoided, but these dimensions are the longest measurements, and can be compared more accurately than any others, especially in the case of those which are nearly equal, and the best that can be done is to make the drawing agree with these measurements. By this time the student should be able to measure as accurately as these drawings require.

These tests will generally change the drawing throughout. The changes should be made, not by erasing, but by adding lines, and without other measurements until the eye can see no more to be done. The thread may then be used, first for the tests of horizontal and vertical lines, second for the continuing of all the edges, and third for covering points in the group opposite one another, that the intersections of these diagonal lines with the edges may be noted. The thread used thus will discover every discrepancy except the slight deviations which only the accurate eye can detect. After the training which is given by these drawings made entirely by eye before any tests are applied, this accuracy will soon be secured.

When the correct lines have been found, the others are to be erased, as explained on page 36, and the drawing is to be accented. But now the student will do well to think of effect, and to see if more interest and expression cannot be given to the drawing than is given by uniform lines. The student has perhaps been taught that the nearest objects are seen most strongly, and that the strength diminishes with the distance. This of course is true in a general way. It is the effect of aërial perspective, or the changing of color by intervening atmosphere. Thus of a row of light objects the nearest will appear the lightest and brightest, and of a number of dark objects the nearest will appear the darkest. The light object in the distance appears darker,[1] and the dark one lighter, and in a sketch representing considerable distance this principle will be of assistance. But it must be stated so as not to convey the idea that there can be nothing in the distance as strong or stronger than the unimportant features of the foreground, for we do not see objects more or less distinctly according to their distance ; in fact,

[1] Very light objects may change but little.

distance has practically nothing to do with it. *We distinguish objects as masses of color, lighter or darker than the colors against which they are seen.* This being so, it is evident that a light object in the background, as a white house seen against dark foliage, must be much more prominent than a near object, seen against another of the same color.

In general, when there is little or no contrast of color, objects are difficult to see without regard to their distance. Place a square of white cardboard in front of a larger square of the same, the latter coming in front of the blackboard. The smaller can be seen very faintly. In comparison with the distinctness with which the larger is seen against the blackboard, the smaller is practically invisible. This experiment proves that we distinguish objects through contrasts of color, and we have to consider what can be done in outline simply, to render the effect of Nature. Can no more be done than to represent the form by lines of uniform strength?

The opinion seems to be general that more can be done. We find that instruction is often given to represent the nearer edges by strong lines, the farther ones by light lines; in fact, to proportion the strength of the line to the distance of the part it represents. Apply this rule to the representation of the two pieces of cardboard, and the nearer is accented by heavy lines, the farther by light lines. This is a direct contradiction of what we see, for the outline of the nearer is barely visible, while the farther is distinct against the blackboard.

In color we certainly should not think of representing the nearer as darker than the farther, or in any other way than as it appears, and the same is true of light and shade. Why should we not do the same when possible, with outline? No reason to the contrary can be given, for the difference in clearness with which the various lines are seen is the result, not of distance, but of contrasts of color, and light and shade. Of course we shall expect to find the strongest lines among the nearest ones, but farther than this we cannot go, and if we adopt the conventional accenting recommended by text-books, we are working by rule and not by observation, and the result will be the production of hard, mechanical drawings.

Character appears in outlines. An object, as a cast, having a smooth, hard surface shows these qualities in its outlines, which will be represented by smooth lines. A cube with smooth faces has sharp, straight edges, which will be represented by straight lines. A box made of rough boards has broken edges, whose character may be given by drawing the irregular outline in which one surface breaks into the other. A drawing from the figure can express the variations in the appearance of the outlines, parts of which are sharp, other parts blurred by light or a growth of hair.

Light affects the appearance of the outlines strongly, in some places making them distinct, in other places indistinct. An even line for everything disregards all these variations of effect; so also does any conventional variation of strength. If the student is allowed to disregard effects in outline work, he will have great difficulty in seeing them in later work. There is no more labor involved in representing effects than in disregarding them, for one line is as easy to make as another, *observation only being required. The student who can see can perform*, and as long as any differences can be found between his drawing and Nature, he can learn to correct the errors.

The conventional accenting taught in the public schools produces the most mechanical, hard, and unnatural sketches when the student works from Nature, indoors or out. Undirected he would never produce such childish and ridiculous effects, but after his instruction in drawing from the object, where he has learned that lines must be represented with a degree of strength corresponding to their distance, he naturally does not think of observing and drawing what he sees, but simply mechanically grades the strength of line as he has been taught. He makes the heaviest lines of the drawing where there should be the faintest indications of lines, and often where no lines at all would be better than faint lines.

It is almost impossible to get a student from the public schools to make sketches in which the unimportant detail, which is no part of the effect, is not brought out with heavy black lines. This is not surprising, for he sees this detail and it is near him, therefore according to his instruction it must be strongly accented.

In outline, as in other mediums, we should do the best we can to express what is before us. The effect of the subject should be considered as well as its form. There is no reason why the student should not be taught to observe the effect, and if once started rightly he will advance rapidly and will make drawings which, since they are representations of Nature, will have variety of effect, will be true, and artistic.

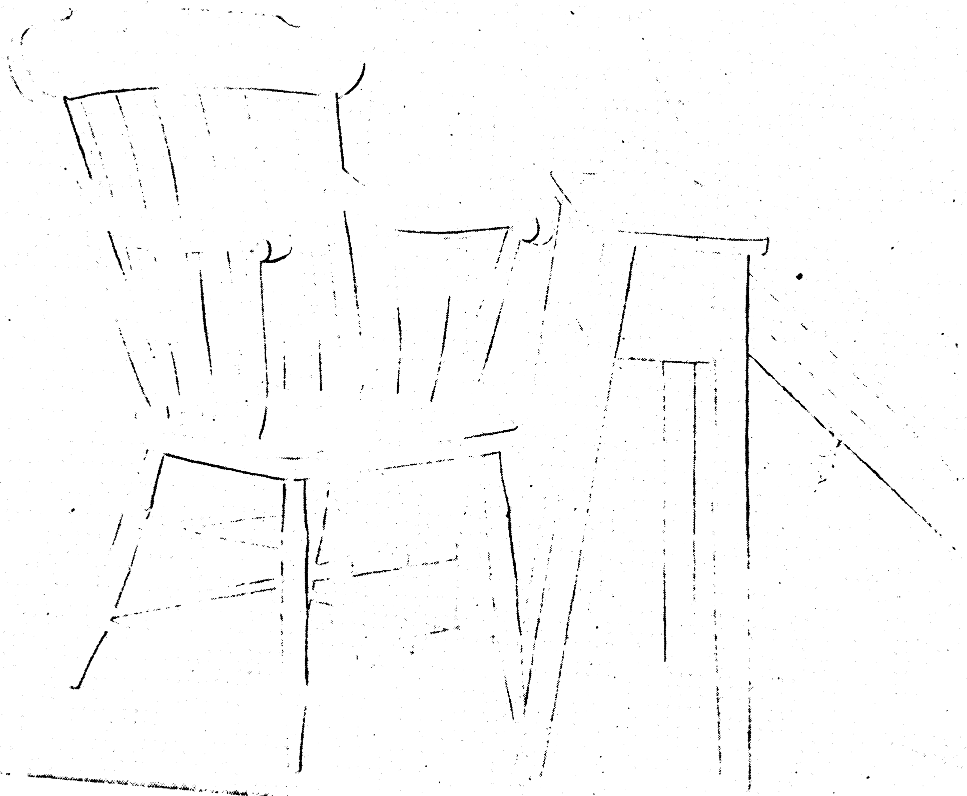
No rule can be given other than to study and represent simply what is seen, as far as possible, as it appears. In outline, without any light and shade, it is impossible to always accent the lines just as they appear. For instance, some edges of the object may be so lost in the shade as to be wholly invisible, but without them the drawing might be incomplete and unsatisfactory. *A correct impression of the facts must be conveyed.* No important line can be omitted even if not seen, but otherwise the lines should be represented as they appear.

In drawings of the geometric solids, where there are few lines in nature, it will sometimes be impossible to accent the lines as they appear, for some of the most important ones may be invisible, or seen so faintly that to represent them as they appear would make the drawing give a false impression. Frequently when the objects are strongly lighted their outlines on the light side of the group intersect one another, so that the outline of the mass is composed of parts of those of several objects. This outline is very prominent, while the edges inside the outline are almost lost in the mass of light. It is evident that in this case we cannot accent as we see. We must accent as we feel the group, and when accenting as the lines are seen is unsatisfactory, we must use our judgment and make the accenting express the facts in a satisfactory manner.

When drawing from furniture or from any subject having many lines, the effect will generally be satisfactory when the lines are accented as they are seen. Here there are so many lines and so many changes in direction that the parts which are not seen will rarely be missed, and the student can represent more nearly what he sees. But it must be understood that it is wholly a matter of feeling for which no rule can be given.

At first most students will have difficulty in seeing any difference in the way in which the various edges appear. This is due to the fact that but a single point can be clearly seen at any one time. The eye glances rapidly over the whole of an object, carefully observing all its parts. We are unconscious of this motion. All parts of the object are seen distinctly, and the variety of effect is not realized. All the parts will continue to give the impression of equal strength until the ability to see the whole of an object at once has been acquired, as explained on page 18. It is not possible otherwise to see simply, to realize effects and masses, and the student must practise until he can thus see before he thinks of success in any medium, for all demand equally a study of the comparative strength of detail.

Although no rule for accenting can be given, the effect is found to conform to the principle that *any detail which comes in either the mass of the light or that of the shade is unimportant.* Thus an edge defining a light surface against another surface also light is not prominent, and an edge separating a surface in the shade from another shade surface is seen faintly. The important features are those which come between the light and the shade.



[illegible] Storey.
Best of the class.

PLATE II.

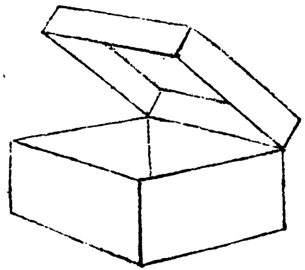


FIG. 4

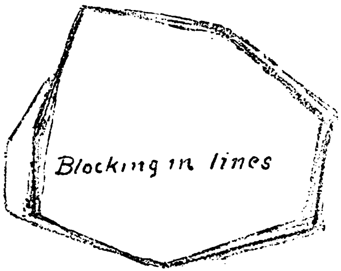


FIG. 5

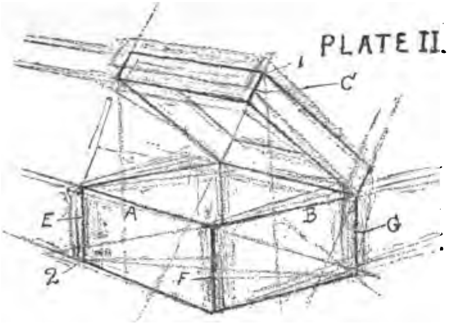


FIG. 6

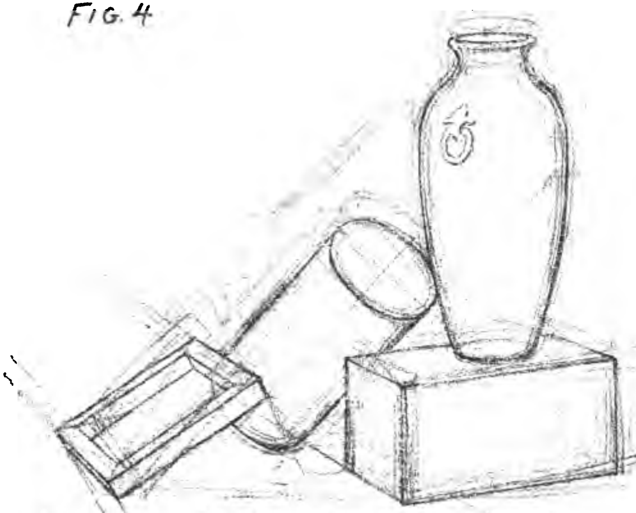


FIG. 7 Sketch when ready to erase and accent

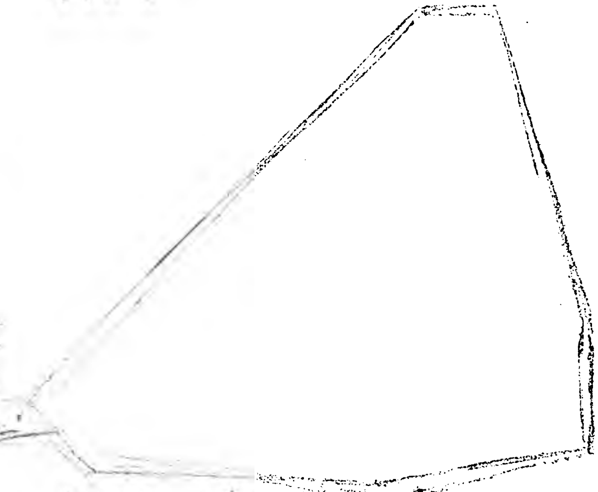


FIG 8 Blocking in lines

Free-hand Drawing, Light and Shade, and Free-hand Perspective.

For the use of Art Teachers and Students and Teachers of Drawing in the Public Schools.

BY ANSON K. CROSS,

INSTRUCTOR IN THE MASSACHUSETTS NORMAL ART SCHOOL AND THE SCHOOL OF DRAWING AND PAINTING, MUSEUM OF FINE ARTS, BOSTON.

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A. K. CROSS, Mass. Normal Art School, Boston.

PRESS OPINIONS.

From PUBLIC OPINION.

"Free-Hand Drawing," by Anson K. Cross, is a collection of notes prepared for the use of the students in the Massachusetts Normal Art School, and is intended as a text-book for both students and teachers. The book is a very comprehensive and well-written treatise on Free-Hand Drawing, Light and Shade, and Free-Hand Perspective, and is abundantly illustrated. The subject matter of the book is to a great extent interesting to the artist, the illustrator and others who may not have the knowledge of projection and scientific perspective necessary to follow some of the problems that naturally arise for consideration. The book can be heartily endorsed, coming from the pen of one who holds so responsible a position, and is worthy the careful study of those interested in art generally.

From THE ARENA.

Mr. Anson K. Cross has given us in his work on "Free-Hand Drawing" the clearest and most practical work for students and general readers interested in the subject, I have ever read. It is copiously illustrated, and will prove exceedingly valuable to all interested in free-hand drawing, light and shadow, and the laws of perspective, etc.

From THE ARGONAUT.

"Free-Hand Drawing, Light and Shade, and Free-Hand Perspective," by Anson K. Cross, instructor in the Massachusetts Normal Art School in Boston, is an admirable text-book for art-students and teachers. Its information is valuable, it is clearly expressed, and thirty-four plates aid in explaining the instructions.

In order to supply the demand created by the improvement of Madame Cave's System of Drawing, several patents have been secured, and arrangements are being made for the manufacture and sale of Slates, Pencils and Drawing Models. The prices with name of agent cannot be given now, but inquiries directed to the author will be forwarded, and full information supplied by the agents.

THE CROSS PENCIL.

Patent Pending.

This pencil is specially made and adapted for the purpose of drawing upon polished glass.

It is tough and elastic in nature, and is thus more durable than other forms of crayons.

It draws upon glass as readily as upon paper, and the drawing is instantly removed by water.

THE TRANSPARENT SLATE.

Process Patented. Other Patents Pending.

This is the first slate which is really transparent. It will be made in different sizes and styles, all of which will provide means for making the slate appear like a sheet of white paper, so that when the drawing is being made the slate may be opaque.

DRAWING MODELS.

Patent applied for.

In order to relieve the teacher of all care of models, a set of adjustable models has been designed. The disks are made of metal, and consequently the entire set occupies very small space. They are connected by angle pieces and wires, and may be arranged to produce many different combinations.

The disks are the developments of the most common geometric forms, and are an improvement on the solid models for free-hand purposes, as all the edges of the solid form are visible at once. Connecting the different parts is interesting and educational, and for use in scientific work their value is at once seen.

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